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## RECURRENT TUMOR OF BROW WITH UNUSUAL HISTOLOGIC FINDINGS.

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A tumor of the brow first noticed five years before had been removed and had recurred. It was a firm but pliable, freely movable mass, 1 cm. in diameter. On removal it was found to consist largely of inflammatory tissue with masses of epithelial cells; apparently having arisen after partial removal of the original tumor, a dermoid.

The following is the report of a case which is of interest from the clinical as well as the histologic point of view:

*History.* A woman, age 32, noticed a small tumor in the left brow 5 years ago. The tumor increased in size very slowly and was excised two years after it was first noticed. The operation was performed by her local doctor and we have been unable to secure a report as to the nature of the tumor. The growth has recurred very gradually, so that two months ago she applied to Dr. John M. Wheeler's Clinic at the New York Eye and Ear Infirmary for advice. Examination at this time showed a tumor about 10x10 mm. in size located at the junction of the outer and middle third of the left brow, partly in and partly above the hair line. It felt as if it was encapsulated and was freely movable over the deeper structures, and the skin was not adherent to its surface. The consistency was that of a rather solid but somewhat pliable mass. At operation the tumor shelled out easily requiring little or no dissection. The patient stated that the recurrence was of about the same size or possibly slightly larger than the original tumor three years ago. There had been no radium or X-ray therapy.

*Macroscopic Appearance.* The specimen consisted of a round piece of encapsulated tissue about 10x10 mm. in size.

*Microscopic Appearance.* There is dense connective tissue around the periphery of the tumor mass. The connective tissue is not very rich in nuclei and is composed of thick parallel

bundles of fibers which are running in a circular direction forming a capsule. The tissue enclosed by this capsule will be described later. See Plate 8, Fig. 1.

On the outside of the capsule there is a piece of epidermal epithelium (Fig. 1, A) which stains blue and the nuclei of which are normal in appearance. This piece of epithelium is only a small fragment and, in those sections of the tumor examined, it is not connected with the connective tissue capsule but is lying on the capsule and separated from it by a thin layer of blood. The superficial cells contain globules of keratohyalin. The surface shows cornification.

The tumor mass itself is composed of two different kinds of tissue:

1. There are pinkish staining trabeculae (Fig. 1, C) which are sharply demarcated and well differentiated from the stroma. They contain no blue staining nuclei but it is easily possible to see, with higher magnification, the outlines of regular cells containing large nuclei. In some places the nuclei are lighter in color and appear as vacuoles, in the center of which a faint pinkish dot seems to correspond to the nucleoli. These trabeculae are partly interlaced as they are seen on crosssection. In some places they contain "pearls" of cornified substances. In one place only there is a part of a trabecula lying against the fibrous capsule, the nuclei of which are bluish and well recognizable. (Fig. 1, B.) This is an area which is an intermediate stage between the bluish epithelium on the outer surface of the

capsule and the pink staining trabeculae of epithelium in the tumor mass, where the nuclei appear only as shadows.

2. The tissue between the trabeculae is a loose connective tissue containing some blood vessels, lymphocytes, a large number of epithelioid cells and very large giant cells. The epithelioid cells and giant cells constitute the main part of the cell element and are very conspicuous. Some trabeculae are being invaded and disintegrated by the epithelioid cells and giant cells. (Fig. 2, Plate 9).

*Diagnosis:* Dr. F. H. Verhoeff very kindly studied this case and diagnosed it as an inflammatory tumor following the incomplete removal of a dermoid cyst.

There is no doubt that the pink staining trabeculae in the tumor mass are necrotic epithelium the nuclei of which have lost their staining properties. This is based on the character and arrangement of the cells and the fact that at one place there is a transitional stage between the healthy epithelium on the outer surface of the capsule and the pink staining epithelium of the tumor.

The question arises as to whether this is a malignant or a benign growth. It could be a malignant epithelial tumor which has become necrotic. This is not probable as the trabeculae are necrotic uniformly thruout their entire extent and show no central foci of necrosis as commonly seen in basal cell carcinoma. Also, there are no malignant epithelial masses in the vicinity of the necrotic trabeculae. Then, too, the fact that the capsule of

connective tissue surrounds the growth is evidence against malignancy.

The original tumor three years ago was, in all probability, a dermoid or epidermoid cyst, because of the arrangement and character of the trabeculae or laminae of necrotic epidermal epithelium. The typical situation of the tumor in the brow also lends probability.

So the opinion given by Dr. Verhoeff, which was fully approved by Dr. Adalbert Fuchs, is undoubtedly the only one plausible, i.e., some epithelial trabeculae were left at the time of removal of a dermoid or epidermoid cyst three years ago. These became necrotic and acted as foreign bodies, with the result that they were surrounded by granulation tissue, lymphocytes, epithelioid cells and foreign body giant cells. Finally, the whole mass was surrounded by the connective tissue capsule.

In reviewing the literature on this subject no case was found similar to this one. Ewing, however, cites a case in which, after the removal of a tumor from the face, the skin edges of the wound were left inverted by the sutures and in time, these edges lost their viability and gave a reaction similar to the one in this case.

*Conclusion.* Clinically, this was a recurrence of a tumor previously removed. But microscopically it was not the usual recurrence by regrowth of the tumor cells but an inflammatory tumor consequential to the original incompletely removed tumor.

I am indebted to Dr. John M. Wheeler for his kindness in permitting me to report this case.

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1. Ewing, James. By personal communication.

## EXTRACTION OF SENILE CATARACT IN THE CAPSULE.

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PRAG, CZECKO-SLOVAKIA.

The results of series of intracapsular extraction of cataract, by various methods, are here reported in comparison with a larger series of extractions without the capsule. Final conclusions are reserved, until a larger series of cases can be reported. But it is now believed that intracapsular extraction is superior for cataracts that are immature, hypermature, or which present nuclear sclerosis, with retinitis pigmentosa and certain forms of uveitis. The Barraquer operation, including a suture, is given a preference; but final judgment must await prolonged observation of cases, as to the late changes occurring in the vitreous. Translated by H. S. Gradle, of Chicago.

In a communication on intracapsular extraction, Giri<sup>1</sup> proposed that different groups of experienced operators should each perform 1,000 intra- and extracapsular operations, for the sake of comparison. It is entirely improbable that this suggestion will ever be followed, for there is hardly an experienced operator who would abandon his accustomed technic to attempt the new. Furthermore, the results of even the same operation performed by various operators cannot be compared. Nevertheless, it is only by some such procedure that any sort of decision can be arrived at concerning the question that has been paramount, particularly in the English literature, for the past ten years; namely, should senile cataract be extracted intra- or extracapsularly?

I have attempted to approach a solution of this problem by utilizing the enormous material of the Eye Clinic of the German University at Prag. After having extracted the first thousand cases of senile cataract in the usual manner, I have attempted all of the intracapsular methods that have been published in as large a number of cases as were available for that type of operation. It is concerning this experience with more than five thousand cases that I have performed, or that have been performed under my direction, that I wish to speak.

In the operative volume of Graefe-Saemisch, published under my editorship and in which I wrote the chapter on Cataract Extraction, there is a rather careful critical review of the various methods of intracapsular extraction. Pagenstecher was the first to propose a usable technic as follows: "Following iridectomy, a spoon was inserted between the lens and vitreous to

about the posterior pole of the lens and the lens delivered by pressure at the lower corneal margin and if necessary by the spoon itself, which really acted as a track for the lens to glide over. It functioned as an instrument of traction only in case the preceding maneuver failing when the lens was really extracted by the spoon. This procedure, which is possible only when combined with an iridectomy, I have performed in a few cases only and to my mind it is the least applicable of all of the various technics. I have never attempted the Gradenigo method in which the zonula is torn by a suitably shaped hook, thereby undoubtedly damaging the posterior surface of the iris, the ciliary processes, and usually the vitreous membrane."

The first type of intracapsular cataract extraction that I performed in any appreciable number of cases was that published by Henry Smith, who expressed an enormous number of lenses with a strabismus hook. In the surgical text book previously referred to, I spoke at length of the references in the literature, particularly those in English, concerning the Smith extraction. Briefly, they told of the very high number of vitreous losses (about 20%), iris prolapses or incarcerations, and even total loss of the eyes, even in the operations that Smith himself performed in America.

My observations have been detailed in the articles of Elschmig<sup>2</sup>, Gradle<sup>3</sup>, and Ascher<sup>4</sup>. I did not follow Smith's method of performing the incision, which is essentially corneal and has its apex at the margin of the upper corneal quarter. As Kuhnt has pointed out, corneal wounds are in danger of remaining patent unduly long, and there is, furthermore, the possibility of an in-

growth of epithelium into the anterior chamber. Therefore, *all incisions for the purpose of opening the anterior chamber must lie in the limbus or at least in that portion of the corneal margin that contains the superficial vessels, and when possible should be covered by a conjunctival flap.* At this point, I wish to mention that unless specifically stated to the contrary, all incisions for the extractions herein mentioned were in the limbus, were covered with a conjunctival flap, embraced approximately two-fifths of the corneal circumference, and were made with two cuts with a Graefe knife.

In my previous communications, I also stated that a *Smith expression is to be attempted only with or subsequent to an iridectomy, as the attempt to deliver the lens thru a round pupil is followed by too great a percent of vitreous loss or iris prolapse, despite an iris root incision* (see Elschmig<sup>5</sup>, Gradle<sup>6</sup>, Stanka<sup>7</sup>). Since these publications, I have used the Smith expression thru a round pupil without loss of vitreous or subsequent iris prolapse, only in a few selected cases of Morgagnian cataract.

The next extraction within the capsule that I attempted was according to the method proposed by Stanculeanu. This consists in a flap incision with a dilated pupil, after which a smooth iris forceps is inserted into the anterior chamber. The capsule is grasped with a broad bite, in the middle or lower half, and the lens luxated by gentle lateral rocking until the lower edge of the lens appears above the lower edge of the iris. The lens is then delivered as in the Smith technique, by pressure on the lower corneal margin with the strabismus hook, tumbled if possible. Up to 1923 we attempted this without iridectomy on 35 eyes (Heidelberger Berichte 1923), with success in 13. In the remainder, the capsule burst, and the lens was extracted out of the capsule. Vitreous prolapse occurred 4 times and iris prolapse 3 times, of which the iris could be replaced once by massage and twice by operative procedure. In 22 eyes, the extraction was combined with iridectomy with 12 successes. In none were there any complications and no eyes were lost.

But here too I arrived at the same conclusion as in the case of the Smith extraction; namely, that the percentage of vitreous and iris prolapses and loss of the round pupil, is too great for universal adoption of this procedure.

In the following two years I also tried the Török modification of the Stanculeanu procedure. This also consists in grasping the anterior capsule with a smooth forceps and luxating the lens, which is then delivered inverted (inferior edge first) by pressure on the lower corneal margin with a Daviel spoon or a strabismus hook.

Since then I have performed the Stanculeanu-Török extraction combined with iridectomy on 44 eyes and without iridectomy on 45 eyes. This does not include the small number of cases operated upon by my assistants.

(a). Combined extraction: In 32 cases of uncomplicated senile cataract, this extraction within the capsule was successful 9 times and the capsule burst 23 times, twice with vitreous loss. In 12 complicated cataracts (following iridocyclitis and usually with preliminary iridectomy), 5 were successful, the capsule bursting in 7 cases, but always without loss of vitreous.

(b). In 45 uncomplicated senile cataracts without iridectomy (the age of the patients varied from 52 to 78 years), the intracapsular extraction was successful 25 times, twice with vitreous loss and once with vitreous in the anterior chamber, but without loss. In 20 cases the capsule burst, with vitreous loss in one case, and with vitreous in the anterior chamber once. The postoperative course did not vary radically from that following other methods, except that iris prolapse occurred in 3 eyes (over 6%), which is a higher percentage than we find in our extracapsular extraction. (Our statistics show 1½%).

During this time, references in the foreign literature, especially English and French, have been piling up regarding the intracapsular extractions performed by Barraquer. Many were as enthusiastic as in the early days of the Smith extraction, while others viewed the procedure with caution. Gallemarts, Nitsch, Zentmayer, Munoz



Urta, Greeves, Foster Moore, Wright, Ubaldo, and Mills have all described the technic accurately and many of them have quoted large statistics. Barraquer himself detailed 1,000 operations in a series of communications, and Mills claims that Barraquer is now nearing his three thousandth operation.

I deemed it necessary to see Barraquer work in his own place and with the assistance of our "Schulministerium" was able to visit him last Easter. Thanks to the great kindness of Professor Barraquer, I saw a small series of operations performed by him and his assistants in Barcelona, and was enabled to examine with the slit lamp a large number of cases that he had operated upon. I am extremely grateful to the courtesy of Professor Barraquer; and between the time of my return and the seventh of June, I performed 46 cataract extractions with his apparatus.

Similar to H. Knapp's technic, Barraquer operates upon both eyes (but only one at a time) sitting behind the patient, whose head is thrown back almost into a hanging posture, while the eye is intensely illuminated by a lamp on a stand. The pupil is widely dilated with eumidrin and cocain and akinesis is done. The upper lid is lifted by a hook and the lower lid retracted by the thumb of an assistant. A semicircular incision is begun in the cornea, but is finished in the sclera, including some scleral fibers and a conjunctival flap. The incision differs from our usual incision in that it is completed by a fiddle bow movement (alternate elevation and depression of the handle of the knife) as is the Smith incision. A suture is laid thru the conjunctival flap, the loop enlarged, and laid on the left side of the eyeball. A very small basal excision of the iris is performed. The suction spoon is introduced thru the right wound angle, with the right hand, under a continuous pressure of 60 cm. (in unruly patients, the lower conjunctiva is grasped with a smooth forceps). The lens is luxated by rotating of the suction spoon so that its lower edge appears

first in the wound. The delivery of the lens is aided by slight pressure with the fixation forceps on the lower half of the cornea. The partially closed suture is immediately drawn taut, after which the toilet is carried out. Finally, further sutures are placed on both sides of the original suture. In case the capsule bursts during the extraction, the lens material is expressed only after the first suture has been tied. Eserin ointment, sublimate salve on the lids, and both eyes are bandaged.

In my extractions, I followed Barraquer's technic exactly, except that I operated from in front of the patient, sitting on the bed as is our custom, and illuminating the eyes with a headlight on my own forehead. The semicircular incision was carried out with the usual technic and I always endeavored to include Barraquer's small scleral flap. Then instead of the iris excision, I performed my iris root incision with the de Wecker scissors after the suture had been placed. Of course, I insert the suction spoon from the opposite side from that Barraquer does, temporally in the left eye and over the bridge of the nose in the right eye. I also varied from Barraquer's technic in that I contented myself with the one suture that was placed early in the operation. For the after treatment, I could not hold with Barraquer's method, which consists in keeping both eyes bandaged and untouched for 3 to 4 days; then a dressing, and for the following 5 to 6 days, bandage over the operated eye only. Atropin is not necessary. Certain it is that this method of after treatment is much simpler and easier, as far as the eye goes.

Up to the middle of July 1924, I had performed 76 Barraquer extractions without iridectomy and 2 with iridectomy, 78 in all. Of the 76 simple extractions, 43 were completed smoothly. Vitreous appeared in the anterior chamber twice and was lost three times in all; and four times vitreous appeared in the anterior chamber before delivery of the lens, on account of technical errors, so that the lens had to be removed with the wire loop; about

10% in all. Twice, during the course of otherwise smooth operations, was the iris grasped with the suction spoon and dragged out so that it had to be excised. In 14 cases, the capsule was opened and the lens delivered extracapsularly. But in the majority of these, the capsule burst just as the delivery was being concluded and could be removed easily.

In 1 of the 2 combined cases, the operation was perfectly successful; but in the other, which was a complicated cataract, the lens could not be delivered and the capsule had to be opened in the usual way. It was very striking that in all cases, the iris never prolapsed before delivery of the lens, but upon completion of the suture was usually in good position or at least the sphincter portion was completely withdrawn in the chamber.

It was very striking that no matter whether vitreous presented before the extraction or immediately following the extraction, practically never did vitreous remain in the wound following tying the suture, a fact that eliminated delay in wound healing. Thus this procedure differs radically in the matter of vitreous, as well as iris prolapse, from the technic of Smith, or Stanculeanu-Török. In the latter procedure, when vitreous prolapse is imminent, it is extremely difficult to effect a smooth reposition of the iris, and vitreous frequently remains included in the wound, even when excised, which is not the case in the Barraquer operation.

In our simple operations by the Stanculeanu-Török method, vitreous prolapsed in 6% and appeared in the anterior chamber in 4% more, and in the combined extraction of uncom-

plicated cataracts, vitreous appeared in slightly more than 4%. But in our 44 Smith expressions without iridectomy, there was 20% vitreous prolapse and 20% iris prolapse, while in the 147 combined expressions, vitreous presented in about 16%; even though we interrupted the operation to open the capsule when the expression did not succeed easily. Among the 76 simple extractions, the iris prolapsed twice; i.e., 2.7%. In the six cases the iris became pressed forward and there was a superficial flat adhesion to the posterior surface of the wound, almost 8%. (See Table).

As to the end results of the Barraquer operations; not a single eye was lost; and in only one case (here the capsule burst) was there no perception of form, although the eye was not deformed. In no case, could a definite visual result be obtained before discharge from the hospital, a matter of at most fourteen days after operation. In almost all cases where the patients returned after four weeks or more, the corrected vision was 6/6 and even 6/4. This merely confirmed the experience of former years that at least four to six weeks must elapse before any visual result can be expected. It is easily understandable that the complete absence of all capsular remains allows of a far better visual result. In the few cases in which I extracted one lens extracapsularly and the other intracapsularly by the Barraquer method, I could not detect any marked difference in the clinical course or end result between the two eyes. But it must be remembered that the extracapsular extraction was usually on a mature cataract, while the intracapsular was usually on an immature cataract. The

RESUME OF MY SENILE CATARACT EXTRACTIONS WITHOUT IRIDECTOMY.

	Extracapsular	Smith	Stanculeanu	Stanculeanu Török	Barraquer
No. of cases	1000	44	35	46	76
Vitreous Prolapse	1.9%	20%	11 %	9 %	10 %
Iris Prolapse	2.2%	10%	9.5%	6.5%	2.7%
Secondary Cataract	5.8%	....	.....	.....	.....

Barraquer eye invariably had a more intense and longer lasting corneal striation (keratitis striata).

*I do not intend to express my definite views about the Barraquer operation until I can publish the details of at least 200 operations; but I do feel that I am justified now in saying that the Barraquer operation is by far the best method of extraction within the capsule. It is somewhat difficult to maintain the apparatus in perfect running order and the extraction within the capsule is somewhat more difficult and takes more time. But complications after the operation are fewer, and the absence of irritation from remaining cortical debris is certainly an advantage. This was best shown in a case of retinitis pigmentosa wherein only the known posterior shell remained, and the Barraquer operation succeeded without mishap.*

It is not advisable to attempt the intracapsular operation in the presence of a very small cornea, or a very shallow anterior chamber; for the iris may be included in the primary incision and the capsule opened. Nor is it wise in the case of a subluxated lens, where vitreous is already in the anterior chamber.

Barraquer's extraction can be performed only when combined with an iridectomy, if the pupil cannot be dilated to at least 8 mm. by homatropin or eumidrin. The Barraquer operation corresponds with the other intracapsular operations in the way the vitreous performs after the corneal wound has healed. Thanks to the kindness of my Colleague, Prof. Barraquer, I was able to examine with the slit lamp a large number of cases that he had operated upon and which had healed perfectly; and I found the same conditions that had existed in my cases. Others, especially Munoz Urra (1922) have reported the same conditions both with this as well as other types of intracapsular extractions.

In the round, freely movable pupil, the vitreous almost always formed a rounded, mushroom shaped prominence that protruded into the anterior chamber; seldom covered by an intact vitreous membrane, but generally by one that seemed to be riddled with small holes.

Even in many cases in which no vitreous entered the anterior chamber, free floccules of vitreous could be found as far forward as the posterior surface of the cornea. In all cases of extraction within the capsule, but least in the Barraquer method, the vitreous membrane and the deeper vitreous layers, seemed to be studded with veils and threads and pigment dots.

*Only further observations over a period of years can show whether such vitreous conditions are irrelevant to the integrity of the eye.* I believe that the behavior of the vitreous may prove to be the deciding factor in the question as to intra- or extracapsular extraction. The character of the lens does not seem to vary according to the method of intracapsular extraction employed. As far as we could see, we never found tags of zonule fibers adherent, but very frequently membranous tags adhered to the posterior capsule which we believed to be parts of the vitreous membrane. But this will be discussed at length elsewhere.

Since unfortunately, or perhaps fortunately, there have been no anatomic examinations of eyes following a smooth successful extraction within the capsule, we performed the Stanculeanu-Török extraction in 4 eyes in corpses and Barraquer in 2, always combined with iridectomy as the pupils were small. The anatomic examination of the eyes operated by the Barraquer method showed that there were no anomalies of the iris and ciliary body, beyond the natural changes expected in a cadaver eye; and the zonule fibers and the vitreous, even as far as the most anterior ciliary processes were in situ. But in the eyes operated by the Stanculeanu-Török method, the unpigmented, as well as the pigmented epithelium of the ciliary body, was severely injured; and the zonule fibers torn almost to the ora serrata.

It stands to reason that positive conclusions cannot be drawn from such experiments, no matter how fresh the corpses, particularly in relationship to the behavior of a living eye after intracapsular extraction. But nevertheless, these experiments, as well as the clinical observations, speak for the marked

superiority of the Barraquer method, over the other types of intracapsular extraction.

Altho I am reserving a definite opinion regarding extraction of senile cataract within the capsule, until I can base it upon a greater number of cases, still I believe that I am today justified in the following; intracapsular extraction is to be preferred to capsulotomy extraction: (1) In immature cataract, particularly in those eyes that have been damaged by some previous iritis, iridocyclitis, or glaucoma, as well as in highly myopic eyes. In eyes in individuals constitutionally or somatically subnormal (as for example, disturbances of metabolism, as diabetes), where even a most careful removal of cortex that remains after extraction of the nucleus after capsulotomy, can lead to an intense irritation of the entire uvea, with possible iritic secondary cataract and even a sympathetic ophthalmia. In these eyes, gradually increasing precipitates on the posterior surface of the cornea and the ingrowth of deep vessels from the limbus show the severity of this trauma. These complications of the period of healing are absent when the lens is extracted within its capsule.

(2). In hypermature cataracts, particularly those with fluid cortex, as well as Morgagnian cataract. In normal individuals and especially in those types mentioned in the preceding paragraph, the albumin that may remain in the eye after a capsulotomy extraction seems to be extremely irritating to the uvea and can easily lead to the end results previously mentioned.

(3). Especially in the eyes of relatively younger individuals, in which there is a nuclear sclerosis resulting from retinitis pigmentosa, chorioiditis, and particularly the insidious form of iridocyclitis. In this type of case, the vitreous membrane is comparatively rather resistant and the capsule thickened, so that intracapsular extraction is relatively easy. If, in these cases, the incompletely opaque lens is not removed in its entirety, after capsulotomy, there results very frequently iridocyclitis, secondary glaucoma, and usually a cyclitic secondary cataract,

that always requires vigorous measures such as iridocapsulotomy. These eyes have been so severely damaged that they react most viciously to all secondary operations, even a simple dissection with a Knapp needle.

It seems unquestionable to me that in these three classes of cases, intracapsular extraction has the preference and it has recently been recognized as such by Axenfeld (Heidelberg meeting 1924). The only question that remains in these cases is as to the type of extraction.

MY INDICATIONS ARE AS FOLLOWS: If the case falls into one of the three classes mentioned and has already been iridectomized, or as I prefer to do in these cases, undergone a preliminary iridectomy, the Stanculeanu-Török procedure has proven about as satisfactory as the Barraquer. In immature cataracts, already iridectomized, or where the extraction is done with a round pupil, the Barraquer is the operation of choice; because the capsule is burst less often than in the Stanculeanu-Török method, there is less vitreous prolapse during the operation, and the damage to the iris and the resultant danger of iris prolapse is less.

*For a simple senile cataract in the stage of maturity, or in the transition from the immature to the mature stage, or in the transition from the mature to the hypermature stage, the usual extraction with capsulotomy is to be preferred to the intracapsular extraction, for here the danger of vitreous prolapse practically disappears, as well as the necessity of secondary operation in the majority of cases, owing to a complete delivery of the lens. But in every case of intracapsular extraction, I wish to advocate the placing of a suture, as in the Barraquer.*

Of course, it is essential that the complete absence of pathogenic organisms from the conjunctival sac must be proven by careful cultural methods before operation, a procedure of mine that apparently has been accepted by all modern operators. This is all the more necessary in cases of intracapsular extraction, where there is a greater percentage of vitreous prolapse and greater chances of infection.

In conclusion there is one thing that



must be accentuated: *No operator is justified in attempting the extraction of the lens within the capsule, until he has completely mastered the usual extraction with capsulotomy, and has learned to recognize and combat properly the complications that occur so much more frequently in the intracapsular operations.*

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## USE OF X-RAY IN UVEOPAROTITIS.

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In the case here reported the enlargement of the parotid glands and bilateral iridocyclitis were associated with diplopia and partial facial paralysis. There was also some prominence of the upper eyelid and the edge of the lacrimal gland could be felt. X-ray treatments applied to the parotid were followed by rapid improvement, and were then given to the eyes thru the closed lids, with equal benefit.

The following case of Mikulicz's Disease associated with bilateral iridocyclitis (uveoparotitis) was referred to me for X-ray treatment by Dr. John B. Corser who furnished the following data:

Mrs. F. C. called at the office October 10, 1922, stating that her right eye had been sore for a week and the right side of the face partially paralyzed. The same side of the face was paralyzed for three months, one year ago. There is now some numbness in the lower jaw near the ear. She had double vision for one day five days previous.

Examination shows the face partially paralyzed on the right side, enlargement of both parotid glands, the right being slightly larger than the left, the folds of the eyelid just below the eyebrow were prominent. In this swelling could be felt the lacrimal glands. Vision of the right eye, at this time, was 6/12, of the left eye 6/6 partly. There were a few lardaceous deposits on the posterior surface of the cornea of both eyes and fine vitreous opacities in both eyes. On dilatation of the iris with atropin, numerous synechiae were shown.

The condition, that of iridocyclitis, became more marked in spite of treatment and there developed a cataract in the left eye. Various methods of treatment were used without success, altho at one time the parotid and lacrimal glands became less enlarged for a period of one month, but subsequently, became larger.

During the course of the disease the case was examined by Dr. William Zentmayer, of Philadelphia, who confirmed the diagnosis of Mikulicz's disease associated with iridocyclitis (uveoparotitis).

Examination by Dr. John D. Wilson of Scranton, Pa., March 21, 1923 failed to find any physical condition that might be a factor in the case. The blood examination showed hemoglobin 75 per cent; red cells 3,670,000; leucocytes 12,200, small lymphocytes 8 per cent; large lymphocytes 5.5 per cent; large mononuclears 2 per cent; transitional 2.5 per cent; polynuclears 81.5 per cent. Complement fixation for syphilis, negative.

Examination by Dr. Jackson at the time of beginning X-ray treatment, August 11th, 1923. Patient a well

nourished white female—27 years of age, red hair, blue eyes. Lacrimation and photophobia, conjunctivitis, cataract left eye.

Both parotid glands enlarged giving the patient characteristic face of "mumps." Both upper lids are bulging, thru which the enlarged lacrimal glands are felt.

Teeth well cared for. Mouth and tongue somewhat dry. Tonsils not enlarged—appear normal. Slight paralysis right side of face. Patient wears dark glasses for comfort. Complains of some slight pain in the swollen parotid glands and of continual dry mouth. Family history, negative.

Six X-ray treatments were given—one week apart as follows: 4 M. A. — 125 K. V. P. 10 inch distance 5 minutes, 5 mm. alum. filter to each parotid and to each lacrimal gland, the eyes and surrounding tissue being protected from the rays.

Marked improvement in the size of the glands was at once noticed. The swelling continued to decrease until the face appeared normal. The normal moisture of the mouth was also re-established. The glands decreased in size so rapidly and the treatment was apparently of so much benefit, it was thought that the same treatment directed to the eyes might possibly produce the same result. Therefore, five X-ray treatments at weekly intervals were given to each eye thru the closed lids as follows:

4 M. A., 125 K. V. P., 10 inch distance, 5 minutes. 5 mm. alum. filter.

The improvement in the condition of the eyes began at once and has continued to the present time.

When seen October, 1924, the following note was made: "No evidence of the original disease of the glands. There is no active inflammation about the eyes. There is a cataract in the left eye, numerous vitreous opacities and numerous synechiae in both eyes. The inflammatory process, however, has entirely subsided. The paralysis has disappeared."

A resumé of this case indicated that X-ray treatment entirely cured the glandular trouble and entirely cured the accompanying disease of the eye. The scars, (opacities, synechiae and

cataract) still remain. Had X-ray treatment been begun in time, it is likely that these sequelæ would not have developed.

In the literature which I was able to find on the subject there is no mention of iridocyclitis in combination with Mikulicz's disease, which was treated by X-ray. Brunn's classification does not mention this combination.

Dr. A. A. Stephens (Practice of Medicine, 1923 quoting from (Bang) Ugeskrift for Laeger. 1919, LXXX, No. 15,) says, "Iridocyclitis sometimes resulting in blindness, has been observed in a number of cases."

Drawing our conclusions then from the experience of Bang, this syndrome is a dangerous malady and should be cured at once if possible. One case, of course, is not sufficient upon which to base a conclusion. This paper therefore, is presented with the hope that the X-ray will be given a thoro trial in these cases, at the beginning of symptoms; with the expectation that the disease will be arrested in its incipency, thereby preventing the destructive eye changes which may follow.

Maitland Ramsay of Glasgow, has reported a case very much like this one, in which there was swelling of the parotid glands, paralysis of the cranial nerves and iridocyclitis, in an unmarried woman of 31 who entirely recovered. This case was cured by the administration of thyroid extract, but treatment was given before the eye changes had become so marked.

Dr. Frederick Tice (Practice of Medicine 1914, under tumors of the parotid glands) says, "A rare type of tumefaction is described by von Mikulicz: It is also known by the term achrocytosis. It occurs in conjunction with enlargement of the lacrimal glands. It is not a pathologic entity, but consists of a round cell infiltration variously ascribed to syphilis, tuberculosis, lymphosarcoma, and leukemia." Mikulicz, however, claims that this particular combination, called uveoparotitis, is a true pathologic entity.

S. Lewis Ziegler, of Philadelphia, believes that Mikulicz's disease may be

differentiated from all the foregoing, and that "no constitutional disease has been found complicating these cases when typical." His article contains many references.

We found no evidence of any of the foregoing diseases in our patient. I

find no case in literature in which this syndrome was treated and cured by X-ray.

I wish to thank Dr. Corser, for referring this patient to me for treatment and allowing me to make this report.

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## COLLATERAL MANIFESTATIONS OF UVEITIS.

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CHICAGO, ILLINOIS.

Pathologic conditions accompanying uveitis illustrate that it is essentially a local manifestation of general disease. The conditions here discussed are fluctuations in tension and corneal vascularizations, neuroretinitis and leucocytosis. Read before the Chicago Ophthalmological Society, April 21st, 1924.

Inflammation of the anterior uveal tract, because of its fairly uniform symptomatology and common occurrence, has too often been accepted as a clinical entity. It will be interesting, therefore, to emphasize some of its collateral manifestations and describe a few of the newer observations regarding them.

*Fluctuations in Tension.* Fluctuations in intraocular tension are common in iridocyclitis. The lowering in tension is characterized by a definite coarse wrinkling of Descemet's membrane. This wrinkling, when once established, will be evident for a long period; in fact, will continue even tho the tension may again rise to normal or even above. It is certain that the presence of wrinkling denotes a previous hypotonia.

The increasing exudation, which may cause the rise in intraocular pressure, is probably rapid; but not sufficiently so to mechanically bring about a smoother appearance of Descemet's membrane. Hence the wrinkling—at least in part—will remain, in spite of the dew like infiltration of the corneal epithelium, the added definite evidence of hypertension.

*Keratitis and Corneal Vascularization.*

If the inflammatory process is extreme in intensity and especially prolonged in duration, the clinical picture of iridocyclitis may be complicated by a definite keratitis, often including a deep vascularization of the cornea destined to be permanent. The eye will then forever bear the evidences of keratitis and uveitis. At times it may be impossible to decide which of the

two had been the primary process. The history, that is the age at the time of involvement, if this be available, as well as the evidence of monocular or binocular involvement, may be factors which may help to a decision.

Binocular involvement, that is a vascularization of both corneas, and the history of its occurrence in early life will indicate that the process had likely been primarily one of parenchymatous keratitis.

Monocular mild involvements of the cornea, characterized by vascularization in the late second, third or even fourth decade of life, are not parenchymatous keratitis due to acquired syphilis. In my experience they are delayed moderate evidences of inherited syphilis.

*Neuroretinitis.* Fuchs in 1918 first mentioned that in cases of chronic iridocyclitis the vision is often very much lower than what may be expected, in view of the comparatively slight obstruction in the optic media, discernible by the ophthalmoscope. The ophthalmologist often fails to take especial notice of fluctuations in the visual acuity, because variations in the clouded media are so common in the symptomatology. It is, therefore, not surprising that a participation on the part of the retina and nervehead in the inflammatory process may be entirely overlooked.

Recent knowledge has disclosed that these complications are quite common in occurrence. Central scotomata have often been found present and are described by Meller in cases of iridocyclitis. Papillitis as a complication has been described by Fuchs, Elschnig and others. The joint response to therapy of the iridocyclitis and the retinal complications in these cases has proven their etiologic relationship and interdependence.

Recently Zeemann has described cases of iridocyclitis, some of them tubercular, with coexisting retinal and papillary lesions. He has sectioned four cases where the anterior uveitis was of traumatic origin. The latter have proven microscopically that the toxins first involved the retina at the

ora serrata; and then passed along the smaller to the larger vessels toward the nervehead, where the secondary lesion was found. These lesions consisted of collateral edema, that is inflammatory swelling at the nervehead. In certain clinically observed cases of nervehead lesions coexisting with anterior uveitis, the manifestations consisted of central as well as sector formed scotomata. It is also accepted by pathologists that the toxins of iridocyclitis may at times pass along the lymph spaces in the vitreous. The direct retinal involvement, from the ora serrata backward, has also been recently confirmed by Meller. He has proven that direct infection at the ora serrata has caused a periphebitis of the retina; not alone in ordinary iridocyclitis, but also in cases of sympathetic ophthalmia.

Recently I have had occasion to witness this participation on the part of the retina and nervehead in several cases of iridocyclitis, thus proving that if recognized the complication may be often found. A case of iridocyclitis was brought in consultation, in which a comparatively clear media revealed a very severe inflammatory edema at the nervehead. This was the cause of almost blindness in this eye.

Two other cases of uveitis with comparatively clear media showed an edema at the nervehead, beautifully visible stereoscopically with the Gullstrand large binocular ophthalmoscope.

It is the province of this paper to suggest a more careful examination of the retina in all cases of uveitis. If found sufficiently transparent the fundus should be subjected to careful scrutiny. In the presence of an unaccountable lowering of the visual acuity, or even without it, one will be surprised how often a nervehead or retinal involvement may be actually discovered. In cases of very low visual acuity, with negative ophthalmoscopic findings, a perimetric examination may disclose a minor involvement.

*Leucocytosis.* Leucocytes in the aqueous are now conceded to be the earliest visible evidence of uveal involve-



ment. These cell elements, when not present to excess in an otherwise unaltered aqueous, demonstrate the normal circulation of the aqueous humor within the anterior chamber.

In cases of endogenous iridocyclitis, the incipience is characterized by a fairly rapid circulation and a comparatively clear cornea. As the process advances rigidity develops in proportion to the increasing viscosity of the aqueous, due to an addition of exudate derived from the blood and lymph. These changes in movement give evidence of the progression or retrogression of the iridocyclitic process. Vogt has observed leucocytes in active ameboid movement on the posterior cornea. I have repeatedly seen individual leucocytes make an instantaneous disappearance from attachment on the posterior corneal surface, evidently again being carried into the activity of the aqueous media.

I will take occasion to also draw attention to a very important, practical and useful observation I have made in cases of choroiditis. In my opinion it is an error to attempt to overisolate choroiditis, as being a clinical entity in itself, characterized as the textbooks say, by the absence of redness or pain. All cases of active or recently active choroiditis—no matter how mild—show

a definite leucocytosis, with leucocytes deposited on the cornea, anterior lens capsule and more or less actively in motion with the aqueous. These leucocytes definitely prove the presence of collateral inflammatory reaction on the part of the ciliary body, tho the choroiditis may otherwise be very mild in its manifestations. That choroiditis may be so mildly chronic as to exclude the possibility of direct ophthalmoscopic diagnosis, is proven by the large number of evidently old chronic cases where slight complicated cataract is the only discernible evidence of pathology.

By the absence of leucocytosis in choroiditis a quiescence may be diagnosed, while the presence of leucocytes definitely speaks for present, or recent inflammation. This is of immense importance—not alone in cases of recent primary choroidal involvement but especially so where old pigmented lesions are present and a recurrence is being suspected.

Because of the absence of the danger of iris synechiae, local medication is often deemed unnecessary in choroiditis. The so easily differentiated inflammatory activity evidenced by the leucocytosis surely constitutes a positive indication for the use of a cycloplegic.

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### ASSOCIATION OF RETINAL HEMORRHAGES AND ARTERIO-SCLEROSIS WITH TOBACCO ALCOHOL AMBLYOPIA.

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The case here reported adds to a series in which retinal hemorrhage was found with tobacco alcohol amblyopia. Similar cases are cited from the literature; and the explanation thru arteriosclerosis is discussed. Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, November 20, 1922.

J. M., white, aged 54, a laborer, came to Wills Hospital Nov. 8th, 1922, because of failing vision. On that date he first noticed difficulty in reading the newspaper. He was able to read until the 14th but by the 16th he could not see the route numbers on the trolley cars. He had been a heavy drinker for thirty-six years; and for four months previous to his coming to the hospital he had drunk from one to one and a half

pints of whisky, denatured alcohol, and gin daily. For forty years he had smoked and chewed tobacco, on an average of six ounces a week.

At the time of his examination at the hospital vision was R. 2/60, L. 2/60. Aside from arcus senilis the external examination of the eye was negative. The pupils measured 3.5 mm. and reacted normally to light and convergence.

R. Media clear. Margins of disc indistinct. Temporal half showed atrophic pallor. The veins were irregular in caliber. The inferior temporal vein was large and tortuous, and the arteries too bright.

L. Media clear. Disc and vessels as in O. D. About 4 dd. diameter from the disc along the superior temporal vessels was a pale hemorrhage about  $\frac{1}{2}$  dd. in size, and in part overlying the vein.

*Visual Fields.* R. Form field normal, color field somewhat contracted. Central scotoma  $35^\circ \times 25^\circ$  extending  $20^\circ$  toward the blind spot and  $15^\circ$  nasalward. L. Form field shows contraction especially on nasal side. Color field somewhat contracted. Central scotoma  $30^\circ \times 25^\circ$  extending equidistant on each side of fixation.

In both eyes the scotoma could be detected with a  $17^\circ$  white test object. The scotoma indicated was mapped with a  $1^\circ$  red test object. There was central scotoma for blue stimulus of very small visual angle but not for blue of  $1^\circ$ . Color field limits had to be mapped with a  $2^\circ$  test object altho  $1^\circ$  was sufficient for white.

I am indebted to Dr. Monroe of the Graduate School of Medicine of the U. of Pa. for the fields.

Physical examination. The heart sounds were normal, the radials firm but not distinctly sclerosed. Pulse 84. Aside from pyorrhea and two stumps the teeth were in good condition. K. J., Romberg and gait normal. A slight tremor of hands when arms were extended.

The treatment consisted of sweats, laxatives, nitroglycerin and strychnin. There was little improvement in vision. The retinal hemorrhage had all but disappeared.

From the rapid onset of loss of vision in this case it is more than likely that we have to deal with an ethyl-methyl alcohol amblyopia rather than a pure tobacco ethyl alcohol amblyopia.

The tobacco object in presenting the case is not so much because of the interest attaching to the presence of retinal hemorrhage in tobacco alcohol amblyopia as to call attention to the pos-

sible bearing of arteriosclerosis in determining the toxic effect of these agents upon the retina and optic nerve.

When we consider the wide prevalence of the use of tobacco and ethyl alcohol, toxic amblyopia from these agents must be counted an uncommon effect, and this is borne out by the statistics of eye disease. Weeks has seen but four cases of tobacco amblyopia among ten thousand patients (.04%). Priestley Smith puts it at 1.2%. In my own private practice I should judge it to be 0.1%. It is probable that ethyl alcohol alone rarely or never causes amblyopia but that its ingestion along with the use of tobacco increases the toxicity of the latter substance. There is some clinical evidence to explain why this is so, and the apparent individual susceptibility.

It would seem that tobacco alcohol amblyopia is not of so frequent occurrence as it used to be. Considering the fact that the use of tobacco has certainly greatly increased whereas people are more temperate in the use of alcohol, it is probable that the combination of the two is more toxic to the optic nerve and retina than either agent alone.

In 1901 I showed before the Section three cases of alcohol tobacco amblyopia, and reported two other cases, presenting retinal hemorrhage, in all of which the abuse of alcohol had been the greater. The nature of the hemorrhages was similar. They occupied the fiber layers of the retina, in some cases overlying the vessels, were pale and thin, and localized to the peripapillary area. In each case there was but a single extravasation. The age of one patient was 49 and of the other two 44.

A review of the literature up to that time revealed 20 cases in which retinal hemorrhages had been noted in intoxication amblyopia. Seven of these were contributed by Uhthoff, all occurring in alcoholics, six of whom were subject to epileptic convulsions, and to this symptom was attributed the occurrence of the hemorrhages. Nettleship reported four cases, one in a patient who was intemperate, one in a user of tobacco and alcohol who had

recovered from his amblyopia without abstaining from alcohol, and one in a person who had been a teetotaler for ten years. Morton's patient used tobacco to excess. Belt's case was a man with multiple neuritis recovering from delirium tremens. Amman has seen several instances in which with more or less definite evidence of intoxication amblyopia small hemorrhages were present. Haab states that "he has seen examples of such hemorrhages and they are associated with spindle-shaped irregularities in the blood columns of the arteries and veins which pointed almost certainly to a microscopic thickening of the vessel walls." I do not recall seeing a case in literature since my paper was written.

In an analysis of the 18 cases in which note was made of the toxic agent used, 14 showed it to be alcohol, and if we include the 6 cases of Uhthoff (and there is good reason for so doing as there is no authority for considering retinal hemorrhage an ophthalmoscopic finding in epilepsy), we have 20 out of 24. Amman points out that toxic agents, especially alcoholism, lead to sclerosis of the vessels; and that it reaches a degree sufficient to produce hemorrhage is noteworthy and demonstrates clearly the destructive action of alcohol. He states that the influence of tobacco in producing these changes could not be shown, as in not one of his cases was this agent alone used. Sachs has found in toxic amblyopia proliferating endophlebitis, a periphlebitis, and a choking of the peripheral capillaries and small extravasations from them. It is generally accepted that in this form of toxic amblyopia there is present an interstitial neuritis besides the purely atrophic element.

While it seems reasonable to attribute these retinal hemorrhages to the toxic effect of alcohol on the vessel walls, an interesting and different view of the question may be taken as a result of Scalinci's and Kruger's clinical observations, which have led the former to the conclusion that there is a definite relationship between abnormal conditions of the cardiovascular system

and chronic toxic neuritis, such as is produced by the combination of tobacco and alcohol in excess. The condition is seen in those who smoke and in those who drink to excess. Those who do these things moderately,—and young men,—are seldom attacked, the patient being usually past 40 years of age.

Twenty cases studied gave evidence of increased blood pressure, accentuation of the second sound of the heart, tortuosity of the superficial arteries, etc. He considers that there is a more or less pronounced alteration in the walls of those vessels which spring from the vaginal arteries, from which are derived the capillary network of the nerve trunk. Cases with marked difference in the visual conditions of the two eyes show that the cause cannot be purely a toxic one. The atrophy of the optic nerve frequently found, is due to arteriosclerotic changes.

Kruger has been able to detect ophthalmoscopic changes in the macular arteries and veins similar to those found in arteriosclerosis, hazy outlines of the arterial walls without circumscribed narrowings; irregular outlines with more or less contraction of the lumen; faint haze of the papilla or at the crossings of the underlying veins; and occasional breaking of the lumen of the vein by the underlying artery. There is also blanching of the outer half of the papilla. He is inclined to believe that the primary changes in retrobulbar neuritis are due to disease of the macular arteries, causing atrophy of the macular fibers of the nerve showing secondarily in the retrobulbar portion of the optic nerve.

While Scalinci's contention is difficult to prove, because of the known deleterious effect of alcohol on the blood vessels,—thus making it uncertain as to whether the sclerotic changes in the vessels arise from alcohol or other causes,—a consideration of the points that he, and also Kruger, make together with the clinical observations here recorded (in the occurrence of retinal hemorrhage of a characteristic type) lends further support to his views.

## ALLERGIC REACTIONS IN VERNAL CONJUNCTIVITIS.

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This is a study of the allergic skin reactions of five cases of vernal conjunctivitis observed in the Clinic of Dr. Burton Chance at Wills Hospital. Citations from the literature bearing upon this subject are made. Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, November 20, 1924. See p. 399.

Many theories have been advanced regarding the causes of vernal conjunctivitis, but nothing of a specific character has yet been discovered to explain the origin of this disease. Danvers<sup>1</sup> in his "Spring Catarrh of the Eyes" mentions under the subheading of pathogenesis numerous experiments and opinions by ophthalmologists, of this and other nations, aiming to find and explain the cause of this periodic spring disease. Bacilli and blastomycetes have been isolated and claimed as causative agents, but have not been confirmed. Efforts have been made to transfer the disease to the eyes of rabbits, but without avail. Some authorities have claimed an intimate relation of this disease with trachoma, measles, lues, nasopharyngeal diseases, auto-intoxication, eczema, rickets, hay fever and asthma. Among the predisposing causes those commonly mentioned are climate, humidity, heredity, sex and age, but no one or group of the causes already mentioned gives a satisfactory explanation of this disease.

Junius<sup>2</sup> has conducted experiments seemingly showing that certain changes in the blood, more particularly in the production of porphyrin, together with the photochemic effects of light, cause vernal conjunctivitis.

Langecker<sup>3</sup> considers that a sensitiveness to porphyrin might be the base of this disease.

Strebel<sup>4</sup> in his article on "Spring Conjunctivitis and Hay Fever" theorizes on the prophylaxis of the latter disease by the drinking of decoctions of dried pollens found to be responsible for hay fever.

Lagrange<sup>5</sup> reports a case of anaphylactic conjunctivitis in a diabetic patient subject to attacks of urticaria. He believes in this case that the conjunctivitis was due to the handling of wood, because an application of oak

bark caused a marked hemoclastic crisis.

In a recent conversation with Dr. Wm. Zentmayer, he related to me the experience of a patient who traced his attacks of vernal conjunctivitis to contact with horses and hay and who developed asthma on eating eggs.

### SIMILARITY TO OTHER DISEASES.

There is undoubtedly a striking similarity in some of the symptoms and pathology of vernal conjunctivitis and that of hay fever, urticaria, some varieties of eczema, various food rashes, angioneurotic edema and erythema multiforme. These points of likeness are:

- I. Intense itching.
- II. Vasomotor disturbance.
- III. Lymphocytosis.
- IV. Eosinophilia.
- V. Periodicity of attacks.
- VI. Frequency in children and young adults.
- VII. Hyperplasia of the affected tissue accompanied by round cell infiltration.

Actuated by the thought that vernal conjunctivitis may be nothing more than an ocular manifestation of an allergy, or hypersensitivity to certain proteins, just as are the diseases which it simulates, it occurred to me that interesting information might be obtained by determining the possible reactions of such patients to fruits and vegetables common to the Spring of the year and to animal and food products with which children and adults are likely to come in contact.

I therefore present the following notations of my experiments.

Case 1. M. S., a boy of 14. The chief complaints were those of itching and redness of the left eye, which had recurred about June 7th, 1924, and continued with more or less severity until September 1st. When first seen by us



early in June, there was a swelling like a phlyctenule at the lower border of the limbus. This swelling gradually extended on the temporal side until by the end of the month there was a series of elevations reaching to the upper limbus. In the right eye there was only a mild grade of conjunctivitis. The patient had had a similar attack of itching and redness of both eyes two years ago during July and August, while spending his vacation at Atlantic City. He believed that salt water bathing had brought on the itching. While in the country last summer, he was much annoyed by itching eyes, but this was of such mild character that it subsided within a short time without medical attention. The patient knows of no other member of the family having had a similar disease of the eyes.

On July 8th, one month after the onset of the present attack, a skin test was performed to determine whether or not the boy might be especially sensitive to strawberries, tomatoes, peas, beans, corn, cat hair, dog hair, chicken feathers, June grass, orchard grass, red top and timothy.

#### THE SKIN TEST.

The technic was similar to that advised by Kolmer in his 3rd addition of "Infection and Immunity," and by Cranston R. Low<sup>6</sup> in his book "Anaphylaxis and Sensitization."

The forearm was first cleansed thoroly by alcohol and allowed to dry. With a Ziegler knife-needle, a scarification was made in the superficial layers of the skin one-eighth of an inch in length for each one of the protein extracts used in the test. A corresponding control scratch was made above each test scarification. Care was exercised not to draw blood. The dried powdered protein extracts of the testing products mentioned above were applied with sterile wooden applicators. A drop of tenth normal sodium hydroxid was then touched to each scarified area by means of a glass rod, dipped into the stock bottle and then rubbed into the wound, together with the powdered protein. The purpose of the tenth normal sodium hydroxid is

to dissolve the protein in the dried powdered extract. The same solution is also applied to the control scratches, using a separate glass rod for each protein test and another for the control.

In case No. 1 a distinct reaction was noted one-half hour after the test about the scarification for strawberries and tomatoes. June grass and red top gave doubtful reactions. Three days later the quiescent scarification marks were seen as tho completely healed, the arm being free of any reactions. On July 16th, eight days after the test, a distinct reaction was seen over the supposed healed scratches for red top and timothy and on July 18th, ten days after the original test, June grass and orchard grass showed an irregular circular raised area, while the red top and timothy showed fading yet conspicuous reactions. In other words the markedly delayed reaction of the grasses stood out prominently against a background of the other healed scratches.

A remarkable transformation took place on the day following the skin test of July 9th, 1924. A distinct recession of ocular symptoms both subjective and objective was observed. Whether there was sufficient protein in the test to have alleviating powers, I do not know. The recession of symptoms was only temporary and the usual manifestations returned within a day. Furthermore, elimination from the diet of foods which gave positive reactions, caused no modification or alleviation of symptoms. After two weeks of observation with alternating applications of zinc, and of boroglycerite there was a distinct recession of symptoms, the itching was less marked and the limbal swellings perceptibly reduced. The gross pathologic lesions at the limbus had entirely disappeared by September 2nd, only a gray translucent streak occupied the region of the original lesions.

The differential blood count on July 10th was as follows:

Polymorphonuclear leucocytes...	16%
Small lymphocytes.....	62%
Large lymphocytes.....	18%
Transitional .....	1%
Eosinophiles .....	3%

The limbus lesion was incised by a knife-needle and the blood and serum oozing from the wound collected on a glass slide. A smear was spread as in the case of a blood smear and stained with Leishman's stain. Microscopic examination revealed a large number of small and large lymphocytes but no eosinophiles. It was impossible to make a differential count of cells because of dilution with tears. A smear taken from the lids revealed many degenerated epithelial cells, but no eosinophiles.

Case 2. J. G., a boy of 9, came under observation July 18th complaining of redness and itching of the eyes for several weeks past. Pericorneal injection and swelling involved the nasal portion of the right and the temporal portion of the left eye, which gradually extended until August 7th, when the right cornea was completely ringed by irregular swellings and the left by a  $\frac{3}{4}$  ring. By August 18th there was a marked recession of the temporal and nasal limbal swellings of the right eye, and of the temporal limbus of the left. In the last few days of August, and by the first day of September the eyes showed a marked, violent reaction accompanied by intense itching, believed to have been superinduced by a spell of hot weather. By September 8th the intense redness had largely disappeared because of a sharp change to cold weather, but the lesions were still manifested. On September 30th the limbal lesions of the left had entirely disappeared. The right eye, however, continued to show a series of elevated hyalin blebs at the nasal limbus until October 10th, when the case was last under observation.

On July 19th tests were conducted as in the previous case, yielding positive reactions for corn, peas and beans; but those for orchard grass, red top and timothy were questionable. On August 1st, tests were again made for corn, peas and beans, orchard grass, red top and timothy. The reaction for peas was positive, but questionable for timothy. On August 5th, four days after the second test, all the scratches were intensely elevated—possibly the reaction of delayed sensi-

tivity. On August 8th another test was made for strawberries and tomatoes, both of which gave positive reactions, altho previously negative on July 19th. The elimination from the diet of foods which reacted positively did not in any way affect the progress of the disease.

A blood smear on July 18th showed the following:

Polymorphonuclear leucocytes....	62%
Small lymphocytes .....	18%
Large lymphocytes.....	14%
Eosinophiles .....	6%

A stain of the bloody fluid obtained from incising the limbal swellings showed a large number of eosinophiles; there being one to every four leucocytes of other variety.

On September 8th, a smear of blood and serum from the incision of the receding limbal swelling of the right eye showed many large lymphocytes, but no other types of white cells.

On October 10th, a smear from the right conjunctival sac showed a large number of polymorphonuclear leucocytes and a few small lymphocytes.

Case 3. P. L., a colored girl six years old, gave a history of three periodic attacks of itching and redness of the eyes. In March of this year, the eyes became red but itching was not experienced until May. This child had lived on a farm during the summer months two years ago where, the mother related, the child frequently slept with a pet pig and frequently played with chickens. In each eye, there were seen the typical vesicles, discrete and confluent, and pericorneal injections extending three-fourths the distance around the cornea, in horseshoe fashion.

On July 25th, scarifications were made on the forearm as in preceding cases, and sensitization tests performed. On this date there was distinct reaction to chicken feathers and June grass. When examined on the succeeding day all signs of the skin reactions had disappeared. On August 14th tests for June grass and chicken feathers were repeated, at a time when the ocular symptoms were receding. The reaction to June grass was ques-

tionable, that to chicken feathers negative.

The blood smear on July 30th showed the following:

Polymorphonuclear leucocytes...	52%
Small lymphocytes.....	34%
Large lymphocytes.....	11%
Eosinophiles .....	3%

An examination of the bloody fluid obtained from incision of the diseased area showed a large number of lymphocytes, both small and large, equal in numbers to the polymorphonuclear leucocytes, no eosinophiles were found. The disease progressed with decreasing severity until September 2nd, when only faint remains of the limbal disease were found in either eye. The itching had largely disappeared.

Case 4. J. K., a youth of 17, a high-school student, had had attacks of itching eyes, beginning in the early part of July, each summer since 1921; both eyes were involved, yet itching was most distressing in the left eye, and it was for the relief of this symptom and a scanty unpleasant discharge from the left eye, that the patient sought advice on August 12, 1924. Examination of the conjunctival surface of the left upper lid showed small flat granulations at the line corresponding to the lower border of the inverted lid. The bulbar conjunctivae were hyperemic. There were no granulations noted in the lids of the right eye. The corneas were unaffected. On August 12th, skin tests were made, and the reactions for strawberries, tomatoes, cat hair, chicken feathers and timothy were positive, as well as for peas, which stood out prominently against the others. The reaction for June grass was questionable.

The blood smear on August 15th showed the following:

Polymorphonuclear leucocytes...	60%
Small lymphocytes.....	26%
Large lymphocytes .....	11%
Eosinophiles .....	3%

Case 5. R. C., a girl of seven, gave a history of attacks of itching, redness and lacrimation, for two summers in succession, with frequent attacks, tho less severe, during the winter months intervening. She was first seen

in June, 1923, because of redness and itching of the eyes, which has persisted for several months becoming intense on the approach of hot weather. On the conjunctival surface along the lower border of the inverted upper lids were broad, flat, discrete granulations which were greater in number toward the inner canthus. The bulbar conjunctivas were markedly hyperemic. There was a scant, thick, waxlike discharge. The patient was seen frequently during the summer months, and at irregular periods during the winter. During cold weather the child experienced a return of the itching when in an overheated room. The granulations appeared smaller, altho distinctly visible, during the winter months. In June, 1924, with the return weather, she again complained of intense itching, lacrimation and photophobia.

As in the preceding cases, tests were made and positive reactions obtained from tomatoes, dog hair, chicken feathers, orchard grass and a questionable reaction for timothy. In this case, as in case No. 1, the itching disappeared after the skin testing for several days, without any special treatments having been given to the eyes.

Thruout the summer months, the itching was intense. At the last examination, November 7th, the itching was not so severe, but the granules on the lids were still present. No general blood count was taken, because of unruliness of the patient.

I strongly suspect, in this case, which persisted during the winter months that the sensitivity to the proteins existing in the feathers of pillows might be responsible for the presence of the disease during the cold months, and that the sensitivity to fruits, vegetables and grasses brought about the repeated attacks in the Spring.

#### REVIEW OF SENSITIZATION TESTS.

In summing up the findings in these five cases, the point of striking interest is, that in each case there was a reaction to at least one of the proteins used in the sensitization tests. Making due allowance for the personal equation in reading and interpreting the

reactions, concerning which there is no definite agreement among laboratory workers, the finding of an allergic reaction even in one patient is significant. Of course, further testing with a greater variety of proteins, and particularly with those of fruits and vegetables common during the Spring of the year would be desirable, but as Low says "one cannot test every case to every possible protein and there is always the possibility that the patient might be temporarily desensitized."

In cases Nos. 1 and 3 there was an increased lymphocyte count in the systemic blood. Case No. 4 did not show such a blood picture, probably because of its receding character, yet even in it there was a count of 37% of both small and large lymphocytes, which is regarded by some as an increase for a patient 17 years of age.

Case No. 2 showed a decided eosinophilia. In the three corneal types of vernal conjunctivitis of this series of five cases, blood fluid from the incised lesions showed a predominance of lymphocytes and in one instance a large number of eosinophiles. The presence of eosinophiles, as you all know, is a frequent finding in the discharge of vernal conjunctivitis. Apropos of this fact Low<sup>6</sup> says that it is evident that eosinophilia occurs in the blood in many conditions, especially of the skin, which are admittedly associated with sensitization.

Abstinence of foods from the diet believed to be the causative factor did not produce immediate abatement of the symptoms, in any instance. This does not correspond with the experience of Dr. J. Alexander Clark of Jefferson Hospital in his work on hay fever and asthma. Removal of the causative agents in his cases gave relief of symptoms or abated attacks. In our cases of vernal conjunctivitis, I believe there were a greater number of proteins operating than the limited tests revealed.

All the cases reported were in young persons, the oldest being seventeen years of age; each gave the history of one or more similar attacks preceding the present one. Itching and red-

ness were the predominating symptoms, the former being more severe at night, and beginning with the approach of warm weather and continuing until the advent of cold weather. In one instance it persisted thru the winter months, but with distinctly mitigated symptoms.

With these findings I wish to call attention to their striking similarity with those of cutaneous rashes caused by certain fruits and vegetables, of the urticarias, of eczema in children, angioneurotic edema, of hay fever and asthma.

Asthma is often attended by lymphocytosis and eosinophilia, as are also allergies to certain foods and animal and vegetable products. Dr. J. Alexander Clark tells me that he found eosinophilia in about 30% of his cases of asthma. Therefore, may it not be reasonable to regard vernal conjunctivitis as an ophthalmic urticaria, or an allergic or atopic conjunctivitis, because of the local and sometimes general eosinophilia, because of its vasomotor disturbance, because of the itching, because of its pathology and because of the allergic reactions herein related.<sup>2</sup>

The pathology of vernal conjunctivitis is much similar to that of urticaria and eczema due to protein sensitivity. Danvers describes it as a hyperplasia of the tissues in each type of the disease. In cases of long standing, the chronic lid type would present, of course, a more intense degree of hyperplasia, leading to hypertrophy. The infiltration of round cells is nothing more than the transmigration of lymphocytes. The chronic irritation in the lid cases leads, of course, to the formation of connective tissue which is the usual effect in any low grade of inflammation.

I take it that both lid and corneal types are but the same disease in different localities, yet I cannot explain why some instances the limbus is affected while in others it may be the lid, any more than one can decide why it is that urticarial rashes appear sometimes on the arms, sometimes on the legs and at other times on the body.



### THE CAUSE OF VERNAL CONJUNCTIVITIS.

The cases here detailed and the results of the tests pursued, lead me to believe that vernal conjunctivitis is an allergy, altho much still remains to be explained. For instance, the reactions to one or more proteins may not give the same response in the late stage of the disease as were obtained earlier. In the asthma and hay fever, however, the reactions are the same at the height of the disease as during the periods of remission. Further, a patient sensitive to one protein may react to several proteins.

Wells<sup>7</sup> is of the opinion that multiple reactions are the result of common groups in the protein molecule, even though the protein may appear to be chemically different. On the other hand, these multiple reactions may be due to a multiple sensitization because a person who can be sensitized to one protein may be sensitive especially to several. Then again a combination of proteins may be the atopic or allergic factor, whereas one protein of the combination acting alone is not potent.

The question of allergic reactions is quite a complicated one and I hesitate to offer anything as conclusive evi-

dence, but would report what has appeared to me to be the strong similarity between the allergic reactions in, and the symptoms and pathology of vernal conjunctivitis and the same reactions, symptoms and pathology of asthma, hay fever, eczema of children and especially urticaria. I feel, however, that we are on the right road to discover the causes of vernal conjunctivitis. It shall require repeated and careful inoculations of proteins in a limited number of cooperative patients to corroborate the results thus far obtained. Taking a series of "reactors" it would be well to inject various dilutions of the proteins selected to determine the minimum and maximum quantities sufficient to produce reactions. Such data obtained would then be feasible for employment in the early spring for the inoculation of the same patients, with the idea of desensitization, preventing a recurrence of the conjunctivitis.

That vernal conjunctivitis is a manifestation of the operation of an allergy can be proved only after repeated experiments. We must be content, therefore, for the time being with the belief that we are working along reasonable and conclusive lines.

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## ATYPICAL RETINITIS PIGMENTOSA.

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This is a report of four cases occurring in one family with citations from the literature bearing upon this group of cases. Read before the Oxford Ophthalmological Congress, 1924

I venture to present a clinical report of the eye findings in these members of one family on account of their individual and collective interest and of a somewhat similar character to those presented before the Ophthalmic Section of the Royal Society of Medicine in November, 1923. The usual ophthalmoscopic picture of retinitis pigmentosa namely, atrophy of nerve with diminution in size, both caliber and length, of retinal arteries and veins, heapings of "bone cells" thruout the periphery and extending in advanced cases as far as the posterior pole represents the typical retinitis pigmentosa and is well illustrated in Jaeger's original colored sketch, which has been reproduced in the text books. Yet there is one other clinical variety, and by far the more common, which for the lack of a better name is called atypical and includes several types.

It is probable that the pathologic process is not essentially dissimilar. The participation of the choroid, altho denied by some writers seems to be generally admitted: thickening of the walls of the large and small choroidal vessels, with pigmentation, atrophy of choriocapillaris; infiltration by round and epithelioid cells in patches and retinochoroidal adhesions. The changes in the retina are summarized by Wilbrand and Saenger thus: 1. High degree of hyperplasia of the connective tissue of the retina. 2. Sclerosis of the vessel walls with narrowing of the caliber. 3. Changes in the pigment cells; partly hypertrophy, partly atrophy; filtration of pigment cells in the retina and on the vessels walls. 4. Atrophy of the optic nerve elements.

While the morbid process is not confined to the nerve elements it is probable that the choroidal changes are not due, primarily, to choroidal or retinal disease; but are secondary to anatomic changes in the nerve and retina. When one considers the associated abnormalities of development one is forced to

the belief that retinitis pigmentosa is the eye complication of a general affection rather than a local one involving only ocular tissues.

Heredity undoubtedly plays a large part in the etiology. In 92 cases reported by Herrlingers (Inaug. Dssert. 1899) the direct and indirect influence of heredity was known in 45 cases. The ancestral disease was in practically all cases hemeralopia and retinitis pigmentosa. In this form of the disease the symptoms appear early in life. In the acquired, as a rule, long after puberty. The influence of consanguinity of parents as an etiologic factor is well established, notwithstanding the adverse conclusions drawn by some of the early writers, and may be estimated as from 15% to 25% of the cases. Among the causes for acquired retinitis pigmentosa are recorded syphilis, typhus, pellagra, rachitis, cirrhosis of the liver and secondary to other ocular diseases. In about 50% of the cases no cause may be assigned. The local complications not infrequently associated are micropthalmos, strabismus, high myopia, persistent hyaloid artery, posterior polar cataract, nystagmus, luxation of the lens, keratoconus and vitreous opacities. The extraocular associated affections include deaf-mutism, lessened acuity of hearing, intellectual weakness and idiocy, microcephalus, hydrocephalus, affection of the nervous system, polydactylism.

Ophthalmoscopic and microscopic study of the optic nerve demonstrates atrophy of the nerve fibers, with increase of interstitial connective tissue and reduction in size of both arteries and veins. More stress appears to have been laid on the changes in the retina and choroid than in the nerve, and yet they are in no sense of greater importance. Indeed, it would seem since the eye changes are so constantly associated with bodily defects, hereditary, congenital and acquired, the ner-

vous system may be the primary seat of the affection of which retinitis pigmentosa is only the ocular expression. The nerve is in all cases partly or wholly atrophied, with practically the same ophthalmoscopic appearance, while the choroidal and retinal pigmentation presents various types. This variation in the degree and character of the pigmentation and indeed its absence must be borne in mind in making the diagnosis.

The clinical history, the symptoms, the etiology, the pathology and the complications have been so satisfactorily set forth by Wilbrand and Saenger and by Leber, (*Handbuch der Augenheilkunde*), that further exposition on these points is unnecessary.

Lawrence and Moore published in the *Ophthalmic Review*, Vol. 2, 1866, four cases in one family, which resemble in many particulars the four cases to be described in this paper. Great credit should be given to these gentlemen for their diagnosis, especially when one remembers that the ophthalmoscope at that time was not an altogether satisfactory instrument. These children were observed between the ages of 7 and 18. They were undeveloped mentally and physically and were the subjects of inherited dyscrasia of the glandular and nervous systems.

The four patients, members of one family whose history in brief is appended, present the salient features of retinitis pigmentosa both ocularly and physically; and yet in not one is the familiar ophthalmoscopic picture present.

Case 1. Nick Lanadady, Italian, aged 20, weight 122½ lbs. Chief complaints are progressive loss of vision and obesity. He first noticed impairment of vision at 16 years of age and ever since it has been going on, until now he sees only hand movements; high myopia and astigmatism; night blindness increasing each year; rapid, jerky vertical and rotary nystagmus augmented by attempts to see objects close to the eyes: vitreous opacities; optic nerves atrophic, retinal arteries and veins reduced markedly in size; pigment spots and a few "bone corpus-

cles" thruout fundi; fields limited to a small area around fixation point; convergence deficient; pupils equal and react. Mons, girdle and mammary obesity, abdomen pendulous, genitalia not well developed. Six toes on right foot. High blood pressure. The sella is slightly smaller than the average, but otherwise normal.

Case 2. Anna Lanadady aged 15, weight 121 lbs., progressive loss of vision and obesity, menses at 14, regular and normal. Has always been fat; commenced to lose vision about two years ago. V=20/50; night blindness; partial optic nerve and retinal atrophy; veins and arteries contracted; numerous round pigment spots thruout periphery of retina; fields concentrically contracted.

Case 3. Joe L., age 12, weighs 110 lbs., progressive loss of vision and obesity, becoming more marked as he grows older. V=R. 2/60; L. 3/60, decided optic nerve and retinal atrophy; a few pigment spots scattered in periphery of each fundus, night blindness; mentally too dull to measure fields; no myopia; no nystagmus.

Case 4. Catherine L., aged 17, weighs 150 lbs. Partial night blindness; fields limited concentrically to a small area around fixation point; pupils dilated, L. a trifle larger; no reaction to light or convergence; convergence almost in abeyance; no muscular paralysis; a few small vitreous opacities; one adherent to posterior lens surface on right. Optic nerves and retina partially atrophied; retinal vessels diminished in caliber and length; pigment spots scattered thruout each fundus; menstruation once only; extremities short and chunky, of hypopituitary type; tapering fingers, short hands, and short arms; feet flat and broad, 6 toes on right foot. X-ray of skull showed normal bones and no sinus disease; and X-ray of the long bones showed epiphyses at wrists and elbows; genital development infantile.

The parents of these children were Italians, not blood related, healthy and without deformity. Of their eight children four were thin and four fat. The thin ones are bright and have good

vision, and the fat ones are dull and have bad vision. The association of mental abnormalities with retinitis pigmentosa was demonstrated as early as 1864 by Höring (Klin. Monats. f. Augenh., 1864, p. 234) who records the history of 5 children born of healthy parents, of which the 3 elder 15, 12, 11 years old respectively, were healthy and well formed; and the 2 younger, a girl of 9 and a boy of 5, were the subjects of retinitis pigmentosa. When the former first began to walk she often stumbled and had difficulty in seeing small objects. She had a violent and obstinate temper. She had six toes on each foot and six fingers on left hand. The boy had 12 toes and 12 fingers and was also of violent and obstinate disposition.

The definition given by H. G. Beck<sup>6</sup> of "Dystrophia Adiposogenitalis" is applicable to cases of retinitis pigmentosa and its associated abnormalities: "A condition due to under function of the hypophysis, characterized by obesity, genital hypoplasia and faulty skeletal development, associated with nervous and mental symptoms which are either the direct result of deficient secretion or dependent upon local or general intracranial pressure."

Treacher Collins suggests the name "Abiotrophy of the retinal neuroepithelium" as a substitute for retinitis pigmentosa. By abiotrophy he means "the premature failing of the inherent vitality of a tissue giving rise to impairment or disturbance in certain

functions before the death of the organism as a whole." The affections of the nervous system, which as a rule are a part and perhaps the principal part of the affection we call retinitis pigmentosa, may be central or spinal. In order of frequency they are idiocy, mental deficiency, epilepsy and spinal paralysis. They may also occur in an affected family apart from any eye disease. Like retinitis pigmentosa they may effect some members of the same childhood, or be transmitted from one generation to the other (Collins).

The clinical and pathologic data fully collected by many writers; Leber, Wilbrand and Saenger, Nettleship and Collins among others, point to an underlying affection of the nervous system.

The pigment changes in the retina present several types but the optic nerve atrophy and diminished vascular supply of the nerve and retina are constant. The name retinitis pigmentosa is sonorous and euphonious but does not convey a correct idea of the fundamental eye condition. It would be more nearly descriptive of the clinical and pathologic process if one should substitute "optic nerve and retinal atrophy associated with pigment filtration."

For the privilege of studying the children detailed in this paper and for the report of their general physical condition, I am indebted to my friends and colleagues, Dr. S. Solis Cohen, and Dr. Edward Weiss, of Philadelphia.

N. E. Cor 17th and Walnut Sts.

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## A SCOTOMA PLATE ATTACHMENT FOR PERIMETERS.

FRANCIS BURTON BLACKMAR, M.D.

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A curved plate here described is readily attached to the arc perimeter. It gives most of the advantages of the campimeter or tangent screen for mapping the blind spot and other scotomas.

In the past ophthalmologists have been confronted with an assortment of perimetric apparatus, each having some merits and disadvantages. Whereas the combination here described also has its limitations, it will serve as a compromise and give a maximum of efficiency in as many respects as is possible for one instrument of simple inexpensive construction.

Although the self registering perimeter is very convenient for recording fields outside of forty degrees, it is very poorly suited for the examination of the blind spot or plotting scotomata and, as Peter has so clearly shown, it is here that the treasure house of field examination lies. The hand campimeter altho allowing great flexibility of examination, very simple in construction and inexpensive to manufacture, is limited by the fact that it can not be used to determine the outline of slightly contracted fields, to measure the angle of deviation of a squinting eye, or to plot the field of fixation. It is thus necessary for the ophthalmologist to supplant it with other apparatus. Altho the campimeter's weight is little, it is monotonous, to say the least, for a patient to hold it before him for the period of the examination, which at times may be rather protracted.

Schweigger's portable perimeter is heavier than the hand campimeter and consequently even more tiring. The same objection to it holds as to all perimeters in as much as it forces the examiner to work in grooves corresponding to each position of the arc. Due to the short radius, there is a loss of accuracy in the findings. However, the mirror using the reflected image of the patient's eye for a fixation point is an excellent idea, for it doubles the accuracy of the patient's fixation and at the same time gives him something far more interesting than a dot to look at, namely his own eye.

Even that most excellent of all tangent instruments, the Lloyd slate, is subject to the objection that the field of fixation cannot be plotted.

The advantages of almost all of the instruments may be combined into one by fusing their good points. Ophthalmologists, possessing a perimeter, can easily do this by the use of a scotoma plate, which can be hooked over the center of the perimeter arc. This will relieve the office of a bulky seldom used screen, which it is almost impossible to illuminate evenly. The plate is a disc of copper or aluminum hammered so that its radius of curvature is the same as that of the perimeter. For a fixation object a small retinoscopic mirror is cemented into the center. Two metal hooks are fixed to the posterior surface to afford a means of attachment to the arc of the perimeter. The disc is painted non-glossy neutral grey, and concentric circles, corresponding to the ten degree marks of the perimeter are drawn lightly on the concavity of the disc. After the normal right and left blind spots have been drawn in their appropriate positions the plate is finished.

The scotoma plate is used just as a campimeter. The test object is glued to a wire object carrier painted the same color as the plate. When examining a patient dots may be made on the plate with chalk to mark the limits of scotomata and fields. These are easily removed at the completion of the examination. Often it is desirable to keep a record of such findings (that is unless the findings are negative). In this case it is very easy to trace the lines on tissue paper and glue them to the usual five by eight history card. At the next examination, several points of the field or scotoma are quickly marked and the record compared. If there is no change this can be noted on the record with the date.

Of course when a normal (or only slightly contracted) field is investigated the usual perimeter chart is indispensable but since often all points recorded lie within forty degrees I have had a rubber stamp made which enlarges this part of the field (within  $40^\circ$ ) to a size just small enough to fit a standard five by eight record card.

This instrument combination has the disadvantage that it is not portable. But it is rare that a perimeter must be used away from the office. A little of

the accuracy of the Bjerrum screen is sacrificed but this loss of accuracy is more than compensated for by increased speed of examination and record with complete freedom from distortion. This ease of examination often means the difference between taking a field and letting it slip by in a case where it is doubtful whether positive findings will be obtained or not.

By placing a properly shaded seventy-five watt daylight bulb on each side of the patient's head a standard

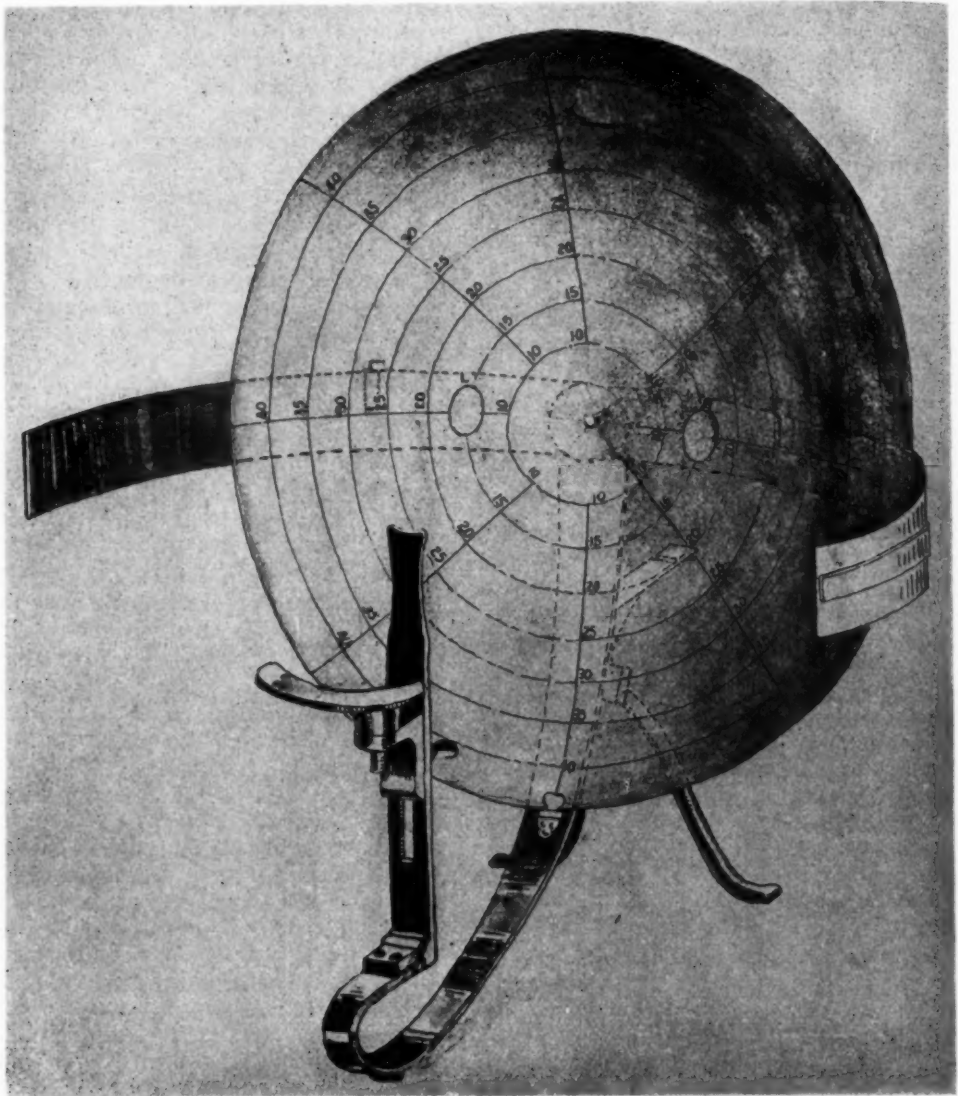


Fig. 1.—A scotoma attachment as fixed upon ordinary arc perimeter.

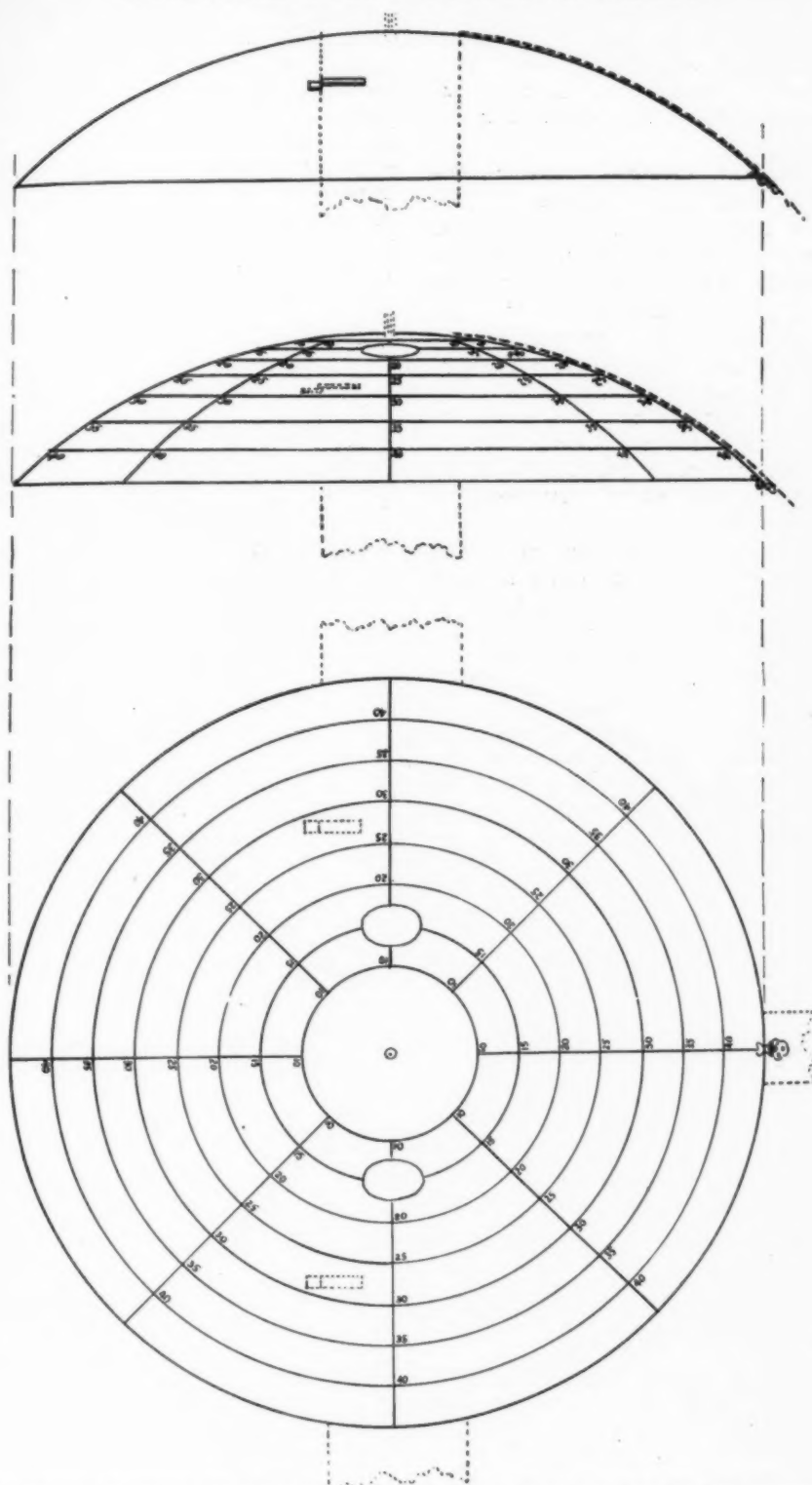


Fig. 2.—Diagram of scotoma attachment as seen from in front, also as seen from the side, showing marking of meridians in circle.

illumination, irrespective of weather or time of day, will be obtained. This will give an illumination of about 20 foot candles if the lights are conveniently close.

The modern tendency to record the size of test objects in degrees or fractions of degrees is the only logical method which allows various observers to correlate their findings irrespective of the type of apparatus used for the investigation. If the illumination used is given in foot candles or by description of the source, in addition to the above information, any observer can compare his findings or, what is more important, the exact conditions of the first examination can be rearranged for future investigations.

After using this plate and perimeter combination for several years I found that Dr. Walker had described an instrument along the same lines in the Archives of Ophthalmology, 1915. His plate probably has two advantages over the one I use, namely the  $1^{\circ}$  circles are marked by slightly depressed grooves in the plate, and an extension of the plate on the temporal side be-

yond  $90^{\circ}$ . According to his description he did not employ permanently recorded normal blind spots on his plate. I have found these normal blind spots essential for rapid work. Altho the first two differences are improvements they greatly increase the difficulty in making the attachment, probably converting an appliance easily made by any tinsmith into an article involving difficulties insurmountable save by more elaborate manufacturing appliances.

Conclusions: The scotoma plate attachment adds to the perimeter means of quickly and easily plotting the normal and pathologic blind spot with sufficient accuracy. It can also be used to speed up the recording of contracted fields, and the paracentral scotomata. When used as described, a standard illumination is furnished. It is desirable that the size of the test object be stated in degrees or fractions of degrees and the amount of illumination recorded with the perimetric record, especially when these findings are for publication, repetition or comparison by other ophthalmologists.

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# NOTES, CASES, INSTRUMENTS

## THE SCLEROCONJUNCTIVAL STITCH IN CATARACT EXTRACTION.

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In a paper read at the last meeting of the Section on Ophthalmology of

the American Medical Association and published in its transactions, Howard indorses the use of a suture in cataract extraction. The form of suture which he favors is that introduced by Verhoeff several years ago. A full description of this procedure is given with several illustrations.

In the discussion which followed, I

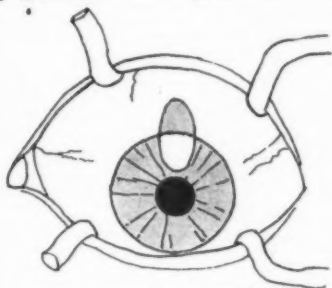


Fig. 1.—Conjunctival flap turned back on cornea.

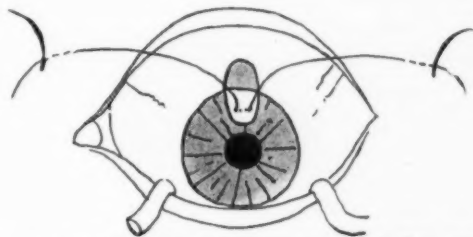


Fig. 2.—Double armed suture introduced thru conjunctival flap.

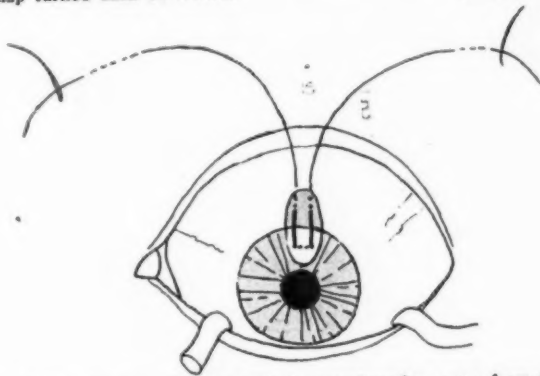


Fig. 3.—Suture also passed under and thru conjunctiva away from the cornea.

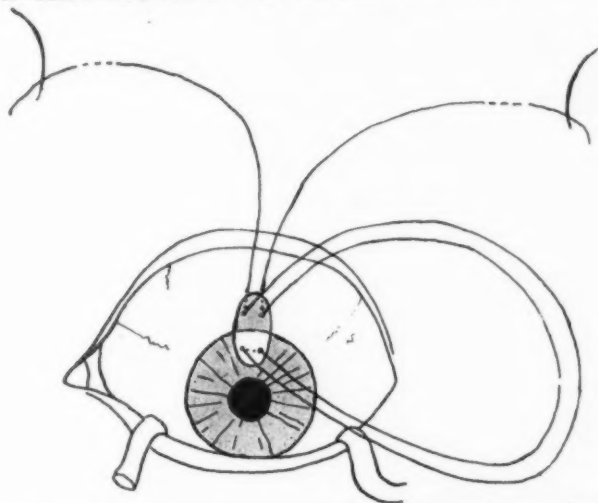


Fig. 4.—Both loops of suture drawn aside to allow incision in corneal margin.

described a modification of Verhoeff's suture which I believe to be superior to the original, and I take this opportunity of describing the suture again for the reason that the illustrations, without which it is difficult to visualize

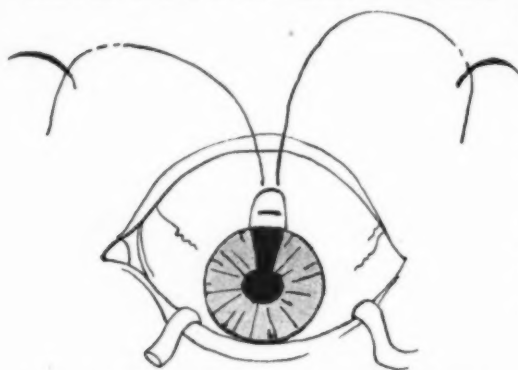


Fig. 5.—After extraction of lens conjunctival suture tightened drawing flap into position holding corneal flap in place. Iridectomy exposed.

any surgical procedure, have not previously been published altho they were shown at Chicago.

*Dr. Verhoeff's technic.* When the time comes after the delivery of the lens to pull the threads tight, the assistant is taught to hold the flap down on the sclera with a squint hook. This, for the reason that the friction of pull-

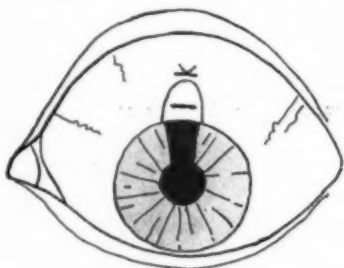


Fig. 6.—Operation completed, suture tied and ends cut short.

ing the threads thru the conjunctival flap opens the wound.

This can be avoided, and the services of the assistant dispensed with in handling the stitch, if the following procedure is adopted. The conjunctival flap is the same as that described by Dr. Howard. It is pierced from in front backward by a double armed suture. Leaving a little space at the limbus for the corneal section, the

needles are directed upward and a bite is taken in the sclera with each, making fixation on the tendon of the superior rectus. The ends of the thread are then laid over the brow, the loops, which consist of only one thread each, are passed to the outer side and the section is then performed. When the time comes to tie the stitch, the threads are simply pulled tight by the operator and the knot is tied. Pulling on the conjunctival flap tends to close the wound, not open it.

This method of suture is used in my clinic in practically all cases of cataract extraction. We are firm believers in the advantages of a suture in cataract extraction.

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## OCULAR FINDINGS IN TWO LEPERS.

J. J. HORTON, M. D.

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In the May, 1924, number of this journal p. 407 is a most excellent abstract of a paper by B. M. VanDreil in which are summarized the ocular lesions of 1,300 cases of leprosy. As leprosy is seen so seldom by most oculists in this country, the following two cases may be of interest:

Case 1. Man, Mexican, age 23. Examined July, 1924. He did not complain of his eyes, and I saw him thru the courtesy of another physician. The disease was of four years duration and was the mixed or nodular anesthetic type. The clinical diagnosis was confirmed by finding the lepra bacillus in the nasal secretion. The blood Wassermann was negative. There was slight necrosis of the ears and lateral cartilages of the nose; it was for this that he had sought treatment. The face presented many small nodules. There were six of these small nodules on each upper lid and a fewer number on the lower. None occupied the lid margins or the region of the brows. There was almost total loss of cilia of the four lids, the few that remained occupying the outer third of the lid margins. The same was

true of the eyebrows, the loss being almost complete in the medial two-thirds and not so great in the outer. There was continual rapid winking of the lids of both eyes. The eyes were otherwise normal.

Case 2. Man, Mexican, age 73, large, strong, alert. First seen July, 1924. Consulted me on account of total blindness of both eyes. He stated that he had noticed the nodules on his face and arms "for many years" and also that his temperature was always above normal, but that these things had given him no concern for worry, and that he was enjoying perfect health except for his blindness. Three years ago he noticed for the first time that his sight was failing. In six months he was totally blind in both eyes. He thinks that visual acuity began to diminish in both eyes at the same time. At no time has he been aware of an acute inflammation, profuse secretion, pain, or any discomfort, other than that due to loss of vision. His was also of the nodular anesthetic type; the lepra bacillus was found in the nasal secretion. The blood Wassermann was weakly positive. The arteries were sclerosed.

The skin of the face, nose, ears, and eyelids was greatly thickened. There were deep creases at both external canthi. There were a few nodules on the face, none on the eyelids. Ocular movements were full in all directions. V.O.U.—0.

R. Palpebral and bulbar conjunctiva markedly thickened and chronically inflamed. Cornea and aqueous clear. Anterior chamber of normal depth. The pupil was round and slightly dilated, about 5 mm.; it did not react to light or when the patient was told to look at his finger. It dilated fairly well and uniformly under the influence of homatropin of 1% strength. The iris appeared normal; there were no synechiae, depigmented or thinned areas, or other evidence of previous pathology. The anterior capsule of the lens was absolutely opaque and gave forth a metallic luster, shiny silvery gray with, at times, green and blue as the angle of the incident rays was varied. The lens trembled when

the patient moved the head, thus giving evidence of a diseased ciliary zone.

Not the least reflex could be obtained from the fundus.

L. The palpebral and bulbar conjunctiva were markedly thickened and chronically inflamed. The cornea was white porcelain like in appearance, the sclera seeming to continue into its stroma uninterruptedly. The limbus was obliterated. Large blood vessels traversed the superficial layers of the cornea, continuing from those of the conjunctiva, while smaller ones from the sclera could be faintly made out in its deeper structure. The pupil or iris could not be seen, but when the patient moved the head, the trembling lens could barely be distinguished. The fundus reflex was not obtainable.

#### USE OF RED FREE LIGHT IN THE EXTERNAL EXAMINATION OF THE EYE.

JESSE W. DOWNEY, JR., M. D.

BALTIMORE, MD.

Following the work of Vogt describing the use of red free light in ophthalmoscopy, much has been written regarding the different lamps devised to obtain a light of this character, the technic of their use and the appearance of the eyegrounds, normal or pathologic, under this type of illumination. One use of the light, and a rather helpful one, so far as I have been able to find, has not been particularly stressed; and that is its employment for the external examination of the eye.

Used in conjunction with a good binocular loupe, the blood vessels of the palpebral and bulbar conjunctiva are made to stand out in bold black relief so that they can be followed in detail. The circumcorneal vessels are plainly seen even in the normal eye and on the slightest injection can be traced with beautiful definition. Vascularization of the cornea is easily seen and the vessels tho minute can be readily traced to their terminations. Episcleral and scleral congestions become

more distinct and easier to differentiate. Corneal abrasions or ulcers, when stained with fluorescein, become brilliant in contrast. The study of the iris in health and disease also becomes most interesting in this green light, as compared with the observations made with the ordinary white light.

The light recently described by Jonas S. Friedenwald, (*American Journal of Ophthalmology*, December, 1924) is, as he says, simple, easy to use and relatively inexpensive. With it one obtains a yellow green light of high but not harmful intensity. It is a useful and practical addition to the office equipment of any oculist.

529 N. Charles St.

### MONOCULAR COLOR BLINDNESS NOTICED AFTER A BLOW ON THE HEAD.

J. E. JENNINGS, M. D.

ST. LOUIS, MO.

Read before the Ophthalmic Section of the St. Louis Medical Society, December 12th, 1924.

Mr. J. L. B., aged 55, was referred to me June 14, 1915, for an examination of his eyes. He gave the following history. Five months ago he was in a railroad accident. The Pullman coach in which he was riding rolled down a 30-foot embankment. His head struck against the roof of the car. He was dazed for a few moments but managed to crawl out. Altho badly shaken, he did not appear to be seriously injured. In a few days he went about his work as usual. Since the accident he notices something wrong with his color vision.

*Examination.* There is no evidence of an injury to the skull. The vision of both eyes is normal with the same correction: plus 1.75 sph.—1.00 cyl. ax 90°. The retina, choroid and optic nerve of both eyes are normal. His color sense was tested with the Jennings self recording test and he made a perfect record. When told that his color sense was normal he said, "Well, there is something peculiar about it. I am repapering our house and notice

that when I look at the wall paper with the right eye, the colors are not the same as they are when I look at it with the left eye."

This hint caused me to test each eye separately. When the right eye was tested he seemed confused and hesitated quite a time in making his selections. He made 17 mistakes. With the green test, he punched greens, fawns, tans and grays. With the rose test, he punched rose, purple, blue and dark blue-green. In short, he made the characteristic mistakes of the red-green blind. When the left eye was tested he made his selections rapidly and without a single mistake. To be quite sure the case was one of monocular color blindness, I got out a complete set of Holmgren's worsteds and spent an hour having him classify colors with his right eye. Dark green was matched with blue, green, and purple. Yellow was matched with yellow, orange, and yellow-green. Rose was matched with pink, red, blue and violet. Red was matched with red, violet and brown. The darker shades of red were called brown, and dark brown and maroon were called black.

The field of vision of the right eye was normal for white but confused for colors. The field of the left eye was normal both for white and colors.

Monocular color blindness without fundus changes is an extremely rare condition. The possibility of such a defect was denied until Holmgren reported a case in 1880. Later he reported another case. In 1888 Becker saw a case of a girl aged 17 in whose family there were color blind males. These three cases were all congenital. So far as I know, there is no satisfactory report of a case of acquired monocular color blindness. Edridge-Green mentions the case of a young man who developed a color defect of the right eye which was thought to be due to excessive work with the spectroscope. Can we assume that the case I report was due to traumatism?

The patient is quite positive he could distinguish colors with one eye as well as with the other before the accident. Notwithstanding his state-



ment, I am inclined to the belief that it was congenital, but did not attract his attention until after the accident. We frequently discover a marked defect of vision of one eye, which must have existed for years without the knowledge of the patient. We also know that many persons who are color blind in both eyes do not seem to realize their defect.

Carleton Bldg.

### TRAUMATIC ATROPHY OF THE IRIS.

H. L. HILGARTNER, M. D.

AUSTIN, TEXAS.

G. D., aged seven years, was brought to me on September 12, 1924, by her parents, who gave the following history. In the preceding June the right eye had been struck by a missile shot from a toy airgun; the resulting inflammation was treated by a specialist in their home town, and the inflammation subsided.

My examination revealed plus tension and the cornea was hazy in the center for an area one-fourth inch in diameter, this haziness being doubtless

due to the intraocular pressure. Of the iris only a narrow rim could be seen, less than two millimeters wide at the upper half and inner lower quadrant, diminishing to nothing at the lower outer quadrant. The lens was generally cloudy and presented several opaque spots near the center and nearly on the horizontal diameter.

In my opinion the atrophic condition of the iris was caused by the intraocular pressure resulting from the swollen lens and the congestion of the inflammatory process.

The vision when the patient was brought to me was counting fingers at two feet.

After six weeks treatment with eserine the tension had subsided, corneal haze had disappeared, and the vision had improved to 20/100. The opaque spots remained.

It cannot be foretold whether a chronic glaucomatous condition will develop with ultimate destruction of vision. The other eye has not been involved, but a question arises whether the retention of the injured eye might jeopardize the other eye thru sympathetic trouble.

Scarborough Bldg.

# SOCIETY PROCEEDINGS

Reports for this department should be sent at the earliest date practicable to Dr. Harry S. Gradle, 22 E. Washington St., Chicago, Illinois. These reports should present briefly scientific papers and discussions, include date of the meeting and should be signed by the Reporter or Secretary. Complete papers should not be included in such reports; but should be promptly sent to the Editor as read before the Society.

## MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

January, 1925.

### Microphthalmia and Glaucoma.

DR. E. C. ELLETT presented E. M., a white male, aged 47, who complained of failing vision beginning at four years of age. He has a blind sister, cause unknown. Vision: R., 15/200; L., 10/200. He wears +6. and +8. glasses. Both eyes show marked microphthalmus. The irides are gray, and surrounding each pupil is a brown area 1.5 mm. wide. The pupils are slightly irregular, small and inactive, right smaller than the left, and they dilate very little to homatropin. The anterior capsule, especially in the left eye, is slightly pigmented.

R. Central corneal opacity. An occasional vessel can be seen. Disc dimly seen and appears normal.

L. Cornea clear. Fundus seen with +12, and disc appears atrophic and cupped.

Tension. Uncertain. Mercury tonometer: R., 20; L., 24.

Fields. R., contracted, nasally. L., somewhat contracted, nasally.

*Discussion.* DR. J. B. BLUE saw this patient March 24, 1924, with an attack of acute glaucoma. There was pain in and around the left eye. He complained of attacks of neuralgia and halos about light. Tension in the left eye was 70, with McLean tonometer. He refused hospital treatment. He was seen by Drs. A. C. and P. M. Lewis and they concurred in the diagnosis. April 26th he complained that the left eye was getting worse. Halos were noticed.

### Cicatricial Entropion.

DR. E. C. ELLETT presented Mrs. G., aged 46, who was operated on five years ago for cicatricial entropion of both upper lids, due to trachoma in childhood. The Beard "altogether" operation, consisting of: 1. canthoplasty, 2. inter-

marginal incision, 3. Hotz' operation, and 4. mucous membrane graft, was done. The graft did not take in the right eye, except at the inner third. On the fifth day she went home. She was instructed to use vaselin on the graft in the left, which she did not do. The graft dried and came off. The vision in the L. has improved from 5/200 to 15/200. Dr. Ellett does not favor the mucous membrane graft, as he gets equally good results with a similar operation, which is less tedious. This case shows that loss of the graft does not vitiate the result.

### Traumatic Retinal Detachment.

DR. A. C. LEWIS presented a case of retinal detachment, due to traumatism. Mrs. M., on November 3, was struck in the eye by the cork from a bottle of peroxide of hydrogen. The next day the lids were swollen, the ball tender, the anterior chamber clear, and the vitreous cloudy. Vision was reduced to perception of light. There was no wound of the ball. A week later the vision was 20/80 and a large retinal detachment was seen up and in, with loss of the lower temporal field. The crest of the detachment was seen with +20. On November the 13th a scleral trephining was done, up and in, 15 mm. from the limbus. The vitreous escaped, denoting a tear in the retina. December 5, the crest of the detachment was seen best with a +10. Central vision was 20/30—3 and the lower temporal field was still defective. On January 10, vision failed, so that central vision was lost and several small retinal hemorrhages were seen. A few faint white lines pass downward thru and beyond the macular region.

DR. E. C. ELLETT said that he has seen no advantage in trephining. His opinion is that the retina is becoming detached in other quadrants and that complete detachment will occur. He emphasized the necessity of complete rest after contused wounds of the eye, as has

been especially pointed out by Harold Gifford.

#### **Optic Atrophy following Pansinusitis.**

DR. W. R. HARRIS presented a case of optic atrophy following pansinusitis. On A. L. J., January 7, 1924, a submucous resection was done, and no complaint was made of the eyes then. A chronic sinusitis, affecting the ethmoids and antrums was noticed on February 1, 1924, and an ethmoidectomy and sphenoidectomy was done on both sides. The patient returned October, 1924, with failing vision in the left eye. The right vision was 20/20 and the left 2/200. A radical left antrum and radical Lynch left side operation was done under local anesthesia. The ethmoids and sphenoids were recleaned. The left disc was pale. Now it is marble white and there is no vision.

#### **Heterochromia Iridis and Cataract.**

DR. J. B. STANFORD presented R. C. R. as a typical case of heterochromia iridis. Defective vision in the right eye was discovered about eight months ago. This was accidentally noticed and may have been present longer. The vision, right eye, is fingers one foot; left eye, 20/20. The right iris is blue and the left, gray. He says that this difference has always existed. The pupils are equal and equally active. The projection is good. The right eye shows a nearly mature cataract.

*Discussion.* DR. E. C. ELLETT mentioned the fact that certain observers think that this condition is a tuberculous cyclitis.

#### **Thrombosis of Central Retinal Vein.**

DR. J. B. STANFORD reported a case of thrombosis of the central vein. Miss M. W., aged 16, was seen first on December 13, 1924, complaining that vision in the left eye had failed suddenly five days ago. She was a rather delicate school girl but said that her health was good. Her last illness was malaria two years ago. Her vision in R. was 20/20 and in L. 15/200. With the ophthalmoscope the disc outlines were blurred and the vessels projected 2.D. above the retina. Several small hemorrhages were seen on and near the disc. The veins were much enlarged and the retina appeared slight-

ly edematous. The diagnosis of thrombosis of the central vein was made. She was sent to her physician for a general physical examination, which was negative. The condition is probably tuberculous and tuberculin will be given when she returns to the city.

#### **Bilateral Glioma of the Retina.**

DR. B. S. GUYTON (Oxford) presented a little boy, aged 10 months, who, at the age of six months, was noticed to have a glassy look to the left eye. When first seen at eight months the eye was greatly inflamed, with swollen lids, and a little purulent secretion, and the glassy appearance of the pupil. A smear was negative. The eye was too much swollen to permit a satisfactory ophthalmoscopic examination. General examination of the child and blood Wassermanns of father and mother were negative. After five days of antiseptic treatment an iritis was evident, and atropin showed posterior synechiae. The inflammation subsided and the eye began to shrink. The vitreous could then be seen to appear as a white mass, without visible blood vessels. One week ago the same glassy appearance was noticed in the right eye.

The left eye is shrunken and very little inflamed. The right eye is normal except the yellow reflex from the vitreous and over the surface of this yellow mass vessels can be seen. Glioma was not thought of till the second eye was involved, but it now seems the probable trouble in both eyes. The inflammation and shrinkage of the left eye are of interest.

*Discussion.* DRs. ELLETT, BLUE, HUGHES and STANFORD discussed this case. Each thought it was a case of "glioma" of the retina. The shrinking of the left eye was considered as a sequel to iridocyclitis. Dr. Ellett mentioned a case reported by Martin Cohen, in January, 1925, number of the Archives of Ophthalmology, in which an eye containing a melanosarcoma developed iridocyclitis and shrunk without perforating or causing any increase in tension. While this is not the usual course he thought that is what had occurred in the left eye of Dr. Guyton's patient.

**MINNESOTA ACADEMY OF  
OPHTHALMOLOGY.**

JANUARY 9, 1925.

DR. T. J. MALONEY, Vice-Pres., Presiding.

**Hysteric Amaurosis and Amblyopia.**

DR. FRANK E. BURCH (St. Paul) read a paper with reports of cases, to be published in full.

*Discussion.* DR. JOHN FULTON (St. Paul) said that nothing could be more interesting than this paper of Dr. Burch's; nothing more interesting in books of fiction. Most of the eye symptoms with which we are familiar may be found in this malady. Dr. Fulton reported a case of a young boy about 8 years of age, in good health, who suddenly lost his sight and was absolutely blind; he had the characteristic stare. The child was not put on any particular line of treatment, but kept as well nourished as possible and kept under favorable surroundings. The sight was restored suddenly in about three weeks. Dr. Fulton said Dr. Burch has given a splendid review of this most important subject.

DR. A. D. McCANNEL (Minot, S. D.) had not had much experience with cases of hysteric blindness. Many of them may have gone thru his hands, but this was the second case that he had recognized as such. The general history was about the same, but when he took the field, about a month previous to the time Dr. Burch saw the case, it was contracted to 30 degrees; both eyes were equal. Dr. McCannel said the patient lives some distance away, but he is going to try to keep in touch with the case and report on it at some future date.

DR. WM R. MURRAY (Minneapolis) said he wanted to agree with Dr. Burch, that hysteric amaurosis is a very unsatisfactory term. These patients are sick, at least mentally, and he thought the old term unsatisfactory.

He called attention to the similarity, which is often present, between certain cases of so-called malingering and cases which are usually termed hysteric amblyopia. He felt that the cases which we classify as malingering are

really psychic cases; the patient does not see, yet there is no pathologic condition to explain the loss of vision; they have all the characteristics which these hysteric cases present, and recover very quickly. There are also cases which are true malingering cases, which have their origin in some form of injury.

Dr. Murray said that probably all the members present had seen cases of so-called hysteric amaurosis. The youngest case he had ever seen was in a girl 10 years old, who suddenly developed very marked impairment of vision in both eyes. Careful physical examination was absolutely negative; and ophthalmoscopic examination was absolutely negative. The child had very little vision; as he recalled it was 10/200. In taking the history of the case he learned that this little girl was anxious to wear glasses; some of her little friends were wearing glasses. Before the child left the office he had her reading 20/20 with + .25 sph. She wore them and had no further trouble whatever, but in a short time became tired of the glasses and discarded them.

Dr. Murray said that these cases require a great deal of study in making a diagnosis and in treatment. They require the aid of the psychiatrist, the neurologist and the internist; and the ophthalmologist should study them very carefully. He felt that most of these cases require the aid of the psychiatrist so far as treatment is concerned.

DR. FRANK E. BURCH (in closing) drew attention to one point in connection with traumatic hysteria in case No. 1 in his paper which involved a suit of \$50,000; namely, the variety of biased testimony obtainable from different sources and the wide discrepancies in diagnosis. This invariably results in adverse criticism of oculists and befuddles the minds of juries. Doubtless, it could be avoided by more careful differential diagnosis.

**Trachoma.**

DR. JOHN F. FULTON (St. Paul) demonstrated 6 cases of trachoma; three sisters, in one family, the father



having had the disease for 27 years. The daughters noticed symptoms of the disease about 2 years ago. The younger daughter had been successfully treated—at the present time has a smooth conjunctiva with the characteristic scars. The next oldest sister is not quite so far advanced in the treatment, the operation of expression being performed about a month ago. The oldest sister has still a large number of hard trachoma follicles confined to the retrotarsal folds. These will require expression in a short time. This patient has not been so faithful in treatment. You will notice that there is no damage to the tarsal plates, or the cornea.

Dr. Fulton demonstrated two other cases, of the same disease, father and daughter, which have been under treatment also for about two years. Unfortunately, the daughter was not able to be present on account of illness. The father's case has been complicated by many attacks of ulceration of the cornea; not the common form of ulcer, which takes place at the edge of advancing pannus, but that which may form any place in the clear cornea. They yielded promptly to mercurochrome and holocain. He said he also expected to demonstrate a case of acute trachoma in a girl about 6 years of age. In this case the trachoma follicles were confined to the fornix of the conjunctiva, and yielded most promptly to expression by the Knapp roller forceps.

Dr. Fulton demonstrated another case of trachoma, the patient being 32 years of age, and as he thought, cured of the disease 9 years ago. Upon examination you will find rows of trachoma follicles in the retrotarsal conjunctiva. Dr. Benedict says "this conjunctiva is calling for nitrate of silver." Dr. Fulton is inclined to think it is calling louder for the expression forceps.

Dr. Fulton stated that he had nothing new to offer on the subject of trachoma, and yet there are many problems connected with this very obstinate disease of the eye which require careful study and investigation.

He stated that we have no positive

proof that the disease is caused by microorganisms, but it is the belief, he thought, of everyone who has given the subject careful study, that such is the case. Future investigators will probably solve the problem. Treacher Collins suggests that the organism is of ultramicroscopic dimensions. Other investigators, Cohen and Noguchi, believe the cause of trachoma to be a nonidentified specific virus. But from whence comes the virus? So the study of the pathology of trachoma is still in the speculative stages.

It is essentially a chronic disease, the length of treatment nearly always extending from 2 to 5 years. The surgical treatment of this disease gives great aid to successful medical treatment. It consists either of removing the contents of the trachoma follicles, or the removal of the surface upon which they develop. The first procedure should always be tried faithfully first. It consists of expression by the Knapp roller forceps, or some modification of them. This, when carefully and thoroly done, and followed up by thoro and persistent antiseptic treatment, Dr. Fulton is convinced gives the quickest relief, in the vast majority of cases. While there is considerable difference of opinion as to the proper treatment of this disease among ophthalmic surgeons, they all agree on one thing; i.e., that whatever means are employed, they should always be applied in the most vigorous, extensive, and persistent manner. After cases are apparently well, they should be instructed to consult an oculist at least twice a month, keeping this up for a number of years.

The question of incubation is a moot one. H. Gifford, of Omaha, had a chance to demonstrate this on his own person, having infected his left eye while operating on a patient. Just one week from the date of the operation, his eye showed signs of having contracted the disease which soon developed into a well marked trachoma. The vision dropped from normal to 20/200. Under the usual line of treatment, which lasted 2 years, the disease was overcome and sight returned to

normal. This case teaches us the care surgeons should exercise in treating this disease, not only so far as their own safety is concerned, but that of their patients also. One of the best-known oculists of this city lost an eye, by trachoma infection, which he obtained while operating on one of his patients.

The cases shown here tonight demonstrate the disease from its acute form to the results obtained after prolonged treatment, resulting in as near to a cure as we ever hope to arrive at in the management of this disease. Dr. Allport has said that there is no royal route in the treatment of trachoma, but Dr. Fulton believes we can demonstrate that some routes are much more successful than others.

*Discussion.* DR. A. J. PRATT (Minneapolis) said that while practicing in Aurora, Ill., he was oculist to the C. B. & Q. Ry. and had the opportunity to see many cases of trachoma. At that time they were employing many Austrians and Hungarians, who lived under the most unsanitary conditions. In treating these cases, practically every known treatment was employed. In 1905 he had a patient, age 13, who had a complete pannus of the left eye. After failing with other treatments, he tried massage of the everted lids with boric acid powder every 3 to 6 days, compressing out any isolated trachomatous bodies with dental dressing forceps. The eye completely recovered without scarring and the pannus disappeared. This case was reported in the *OPHTHALMIC RECORD* of January, 1906, and in 1907-8-9 other reports confirmed this line of treatment. The result is undoubtedly due to the mechanical irritation, as boric acid is not particularly germicidal, altho it may have some special action on the cause of trachoma.

Dr. Pratt said they still use the same line of treatment with the addition of the home use of copper sulphate in glycerin. The patient is given a 10% solution of copper sulphate in glycerin and is told to start with one drop to a teaspoonful of boiled water, used as an eye wash, and to increase the strength

until one drop of the 10% solution can be used in the eye. If the case is seen before the scarring condition is present, it will recover without scarring. A simple method of examining the superior fornix is to thoroly cocaineize the eye, evert the lid, then reach under the everted lid and catch the conjunctiva with dental dressing forceps, drawing it into view. This is painless and gives a full view.

DR. W. L. BENEDICT (Rochester) stated that Dr. Fulton had asked him to say something about trachoma. Some 3 or 4 years ago he had read a paper before the State Society giving their treatment of trachoma, in which he stressed the use of silver nitrate. He said that we have been told the trachoma we see here is different from that found on the Atlantic and Pacific coasts, and somewhat different from that on the Indian reservations. He said he had not seen enough of the Italian and Grecian types of trachoma to verify this, but he mentioned the fact that last summer there was a doctor here from Cairo, Egypt, who spent a week or two in Rochester, and this doctor told him that the trachoma he had seen in this country was far different than the trachoma prevalent in Egypt.

Dr. Benedict said he did not know that we have any bacteriologic proof of different types of trachoma, but he had found that the treatment of trachoma is pretty nearly the same all over the world. There had been waves of operations, and waves against operations. In Egypt, he understood the treatment is given by Egyptian natives, as directed by Dr. McCallan, and they are operating on nearly all cases of trachoma by resection of the tarsus. A few years ago that was very prevalent in this country, but Dr. Benedict thought that in some of the southern states more blindness was caused by this operation than by the trachoma itself, until the operation fell into disrepute. The cases he had seen from the southwest have had most troublesome corneal complications. Dr. Benedict thought that in this part of the country operation on the conjunctiva

is very seldom done for first or second stage trachoma. The large follicles should be expressed, but rather gently. He heartily disapproved of the compressing operation, or hard scrubbing of the conjunctiva by brush soaked in bichloride. This causes a tremendous reaction and does not cure the trachoma.

Dr. Benedict said that Dr. Pratt's experience with the use of boric acid has been tried out, both in this country and abroad, and has given almost universally good results. For the patients in this part of the country, he felt the best thing we could do is to apply 10 % silver nitrate solution to the conjunctiva, neutralize it and wash it off immediately, and repeat this after the coagulated conjunctiva has sloughed away. If applied the second time before the film has sloughed off, we are likely to burn too deeply. He did not think it necessary to remove all the granulations by expression. If silver nitrate solution is used carefully and intelligently, he felt that we could take care of most of the trachoma we see in this country. The corneal complications should always be considered as preliminary to intraocular disturbances. It is necessary to keep the pupils well dilated during the acute infective period of trachoma.

Dr. Benedict stated that Dr. Webster Fox has been designated by the Department of the Interior as a sort of godfather to the oculists treating the Blackfoot Indians. He had published one or two articles. He was talking with Dr. Fox during September and Dr. Fox said that one article was likely to be misleading; that he only resorted to resection in the most aggravated cases of trachoma, where corneal complications had already reduced the vision to 20/200 or less. Dr. Benedict thought it was due Dr. Fox that some correction of this misapprehension be made.

Dr. Benedict wanted to add a word on the necessity of urging continuous treatment in trachoma; that it is not right to let these people be treated at home by someone who does not understand the effect the remedy is supposed

to produce. He is absolutely opposed to the use of the copper stick, and has no use whatever for the copper solution. Silver nitrate and bichloride ointment are all he had ever used in the last 6 years, combined with sufficient atropin to keep the iris quiet and compresses to keep the patient comfortable.

DR. WM. R. MURRAY (Minneapolis) wished to say a word in regard to the use of silver nitrate in cases of trachoma. He recalled that when he was an intern at the Illinois Eye and Ear Infirmary, a good many years ago, they took care of a great many cases of trachoma—probably 50 to 60 cases a day—coming from lower Illinois, where trachoma seems to be endemic. Their standard method of treatment at that time was silver nitrate; evert-ing the lids and brushing with a 12% solution of silver nitrate. It was heroic treatment and intensely painful, but the results seemed to be good. He has since that time used 2% silver nitrate, and recently has been using 4%. It seemed to him there are some advantages in using a 4% solution, if used carefully.

He thought that sometimes there were indications for the use of the copper sulphate, but that it is very much overused. He had seen many trachomatous exacerbations following its use. He thought expression of the follicles, in cases where it is indicated, is one of the most valuable procedures we have.

He mentioned one case of trachoma in a young lady, one of the most active cases he had ever seen. There was very active pannus in both eyes. The young lady, soon after coming under treatment, contracted typhoid fever and was in the hospital for about 4 weeks, and when she came out of the hospital the trachoma was almost cured. He had seen that case at intervals since then, and there has been no return of the condition. He did not know what there was about the typhoid fever that cured the trachoma, but such seemed to be the case.

DR. FULTON (in closing) said, in regard to the Egyptian trachoma cases,

it has been demonstrated by MacCallan that this form of ophthalmia is not true trachoma; but a mixed infection, most frequently associated with the gonococcus. He said that the enormous amount of blindness in Egypt was not due to trachoma but to other infections complicating this disease.

In regard to the North American Indian, Dr. Fulton said that many years ago there was an Episcopalian minister who went up in that northern country who was very much interested in the Indians. When St. Luke's hospital was opened in St. Paul there was plenty of room and so they filled one of the wards with Indians. Among the Indians you will find trachoma in its most vicious form. Dr. Fulton said it was in treating a large number of these cases that he became disgusted with the copper stick, and had not used it for about 20 years because it seemed to do more harm than good. Expression, gently and thoroly performed, does not bring about much trauma, but usually produces satisfactory results.

In reply to Dr. Pratt, he said that the boracic acid treatment, together with gentle massaging, was a mild form of expression and it was probably due to this that the brilliant results, reported by Dr. Pratt and many others, by this form of treatment, were brought about.

#### **Carcinoma of Orbit.**

DR. CARL LARSEN (St. Paul) presented a case, the past history of which is as follows: About 7 years ago the patient noticed a small irritated area between the bridge of the nose and the left inner canthus. He described it as being at that time about 3 mm. in diameter and covered constantly with a small dry crust. After having treated it with home remedies for 1 year, he consulted Dr. Doolittle of Toronto, Can., who made a diagnosis of rodent ulcer, and began electrolytic treatments with zinc sulphat, 1 or 2 weekly, for a period of 18 months, when he discharged the patient as cured. No signs of recurrence appeared for 5 years, or until 15 months ago, when his left eye began to feel as if it were

harboring a foreign body. He was much troubled with lachrimation and again consulted his former physician. At that time a small lump was noticed in the neighborhood of the caruncle. Since then this mass has increased steadily and rather rapidly in size. For the last 6 weeks the left eye has been very troublesome from excessive lachrimation. He has had no pain at any time nor any visual disturbance.

When first seen two weeks ago a considerable amount of ptosis was present, due to edema of the left upper lid. On separating the lids a fairly large mass was seen in the region of the caruncle covered with deeply inflamed conjunctiva. The eyeball was pushed away from its normal position towards the left, at least 1 cm. Motion of the eyeballs seemed not to be interfered with in any direction; no double vision was complained of, and vision in both eyes was 6/6. Between the bridge of the nose and the inner canthus was a smooth, soft, white scar remaining from the electrolytic treatment of the rodent ulcer 6 years ago. Palpation gave the feel of a firm mass extending from the roof to the floor of the orbit, and apparently quite firmly fixed to the inner orbit wall. A working diagnosis of an orbital malignancy, probably of a carcinomatous nature, was made, and operation decided upon in order to secure tissue for section, as well as to remove as completely as possible the tumor mass.

Anesthesia was induced by 4% cocaine instillation into the conjunctival sac, block anesthesia of the supra- and infraorbital nerves with 1/2% novocain and infiltration of the surrounding orbital tissues with the same solution. An incision was made thru the conjunctiva midway between the limbus and inner canthus, over the most prominent portion of the mass, which was found to be densely adherent to the overlying conjunctiva as well as to all other structures with which it came in contact. No sign of encapsulation could be made out. The mass, with its overlying conjunctiva, was excised well back into the orbit by scissors dissection. It soon became evident,



however, that complete removal of all of the infiltrating tissue was entirely impossible, short of a complete exenteration of the orbital contents. Considering the manifest malignancy and wide dissemination of the growth, it was deemed hardly worth while to subject the patient to this major procedure. The wound was closed and we decided to rely entirely on radium for the destruction of the remaining malignant tissue. The mass removed was about the size of the last joint of the index finger, of a whitish or grayish color and distinctly firm consistency.

**Pathologic Report:** The preliminary report of the pathologist gave a diagnosis of a probable endothelioma of the most rapid growing and malignant type, but on further study this provisional diagnosis was changed to that of basal cell carcinoma. This diagnosis was confirmed by another very competent pathologist. With this diagnosis established, the outlook for the patient becomes very much better than it could have been had the growth proved to be an endothelioma.

It seems quite evident that we are here dealing with a recurrence of the basal cell carcinoma which first manifested itself as a rodent ulcer of the skin, 6½ years ago, and which has doubtless extended to the orbital tissues by direct contiguity rather than as a true metastasis, which is indeed rare in this type of neoplasm. We feel that under the circumstances a complete exenteration of the orbit would hardly be justified, nor would it in all probability add greatly to the patient's chances of ultimate recovery.

**Discussion.** DR. PAUL BERRISFORD (St. Paul) thought that this case was one quite typical of the common rodent ulcer starting in the skin of the nose near the internal canthus, very slow growing and extending over years of time. He thought that those present who had services at the City and County Hospital had excellent opportunity to study the basal celled carcinoma in its worst stage. A noteworthy feature is the resistance of the eyeball to invasion. He saw one case in which all the soft parts, including

the lids, had sloughed away, only a small portion of fat remaining in the depths of the orbit; and upon it lay the uninvolved globe and optic nerve.

DR. GEO. C. DITTMAN (St. Paul) said, a case which would come within this same class was that of a woman 73 years old who presented herself 3 years ago with a growth on the lower lid, external to the lacrimal duct; in size the growth was about equal to a large pea and infiltrating the lower lid, which produced a marked ectropion and the usual symptoms accompanying this condition. At her age one should consider the probable life expectancy, when considering the method of treatment. At best it would be about 4 years. The debatable question was whether to do a resection of the lid, apply radium, or fulguration with high frequency current. Fulguration was applied 3 times, when the tumor sloughed away and gave no further trouble and at the same time, thru the scar formation formed, the ectropion entirely disappeared. This proved a very comfortable form of treatment for this case, as the patient lived for two years without any signs of a recurrence and then she died from an endocarditis.

DR. H. J. ROTHSCCHILD (St. Paul) said he would like to report a case of basal celled carcinoma of the upper lid, in a woman 55 years of age, where radium was used with complete success. He was able to prepare a shield of leadfoil which was dipped in paraffin and inserted under the lids to protect the eyeball, and under radium treatment it yielded very quickly. That was 3 years ago and there has been no recurrence to date.

#### Hemorrhage in Retina Following Injury from a Baseball.

DR. JOHN BROWN (St. Paul) reported this case: Richard L., age 8 years, seen first on August 3, 1920. This boy was struck over the right eye with a baseball, 3 days before I saw him. There had been a laceration of the brow, which had been stitched by the family doctor. There was some blood settled about the eye. Lids very slightly swollen. The conjunctiva was

free from any sign of hemorrhage. The cornea was not injured. The pupil of the right eye was widely dilated and showed no accommodative effect. Anterior chamber normal. The eyes moved synchronously in every direction. There was no hemorrhage into the vitreous, but the haziness of the vitreous precluded any detailed examination of the retina. It appeared normal as far as could be seen.

From this time there was a gradual clearing of the vitreous, and in a few days a row of petechial hemorrhages, some very minute, could be seen extending out from the disc to the region of the macula. There were no remnants of hemorrhage in the vitreous. Vision in right eye; hand movements to the extreme left side. The left eye 20/20 and with  $+0.75 S = 20/15$ . Subsequent retinoscopy showed R.  $+ 2.25 S$ ; L.  $+ 1.00 S$ .  $\odot + 0.50 \times 75^\circ$ .

He was seen again Dec. 6, 1924, at which time he showed the condition that appears now, of disc shaped cut-out spots and pigmentations which are the remains of the petechial spots seen at the time of the injury. This eye has good peripheral vision, but the central vision is as when examined about 4 years ago.

#### Symmetric Vitreous Changes with Sudden Onset.

DR. JOHN BROWN. Mrs. W. C. S., 48 years old, seen on Feb. 19, 1924. Family history negative. Personal history; married, has 2 children living and well. Always had an active life and felt well. Three weeks ago, following a great deal of stress and physical strain, after sewing late at night, she was awakened by a most severe pain at the back of her neck and base of the skull. She says it seemed as if her eyes would burst from her head. She was semi-delirious for 4 days, but developed no temperature at any time. She had no apparent paralysis, but could not move on account of pain it produced.

It was found that she had only light perception. Dr. Balcome, her attending doctor, could find no cause for the condition. When I saw her Feb. 19th, three weeks after the attack, she was in bed; but had been carried out to a

chair for an hour on 2 successive days. The pain had gone and all she complained of was the blindness. The eyes showed a deviation, but she had had a strabismus since childhood, which the attack had not altered. The vision was, R. counting fingers to the side at 3 feet, L. counting fingers to the side at 2 feet. The light reflexes were perfectly normal, the cornea clear, anterior chamber normal. The tension was equal and normal to the finger tips in the two eyes. While one could see well into the anterior chambers of the eyes, the appearance and expression was that of a blind person. With the ophthalmoscope it was impossible to see beyond the lens, which appeared clear. The vitreous haze was so uniformly dense that not any peripheral vessels could be made out. The left vitreous seemed more uniformly dense than the right. The urine analysis had been made at several times and was negative. The Wassermann was negative.

She was seen from week to week and showed gradual improvement in her vision. When she looked to the side she could see well enough to grope her way about the house. A month after I first saw her I was able to see, to one side of the vitreous haze, the vessels. The progress was extremely slow under the treatment which I recommended. This consisted of di-nin 10% in glycerin dropped into the eye at night, pilocarpin sweats, iodides internally and mercurial rubs to the temples. On July 7th, 1924, she could be gotten down to the office and her vision at the time had improved, right eye 20/100 and with her glass ( $+1.25 S$ .) it was 20/50. The left eye 2/100 and with glass no improvement. At this time a uniformly dense haze of the vitreous appeared as a ball within the clearer vitreous. This seemed to be slightly movable in the vitreous. August 4th, the vision had improved to 20/100 in each eye and with the aid of her glasses 20/40++ in each eye. She can see time on her watch and headlines in the paper. On October 2, 1924, her vision had improved to 20/50 in her right eye and with her glasses to 20/30. The left eye 20/40?? and

with glass 20/25??. The vitreous clouds were very much thinned and in the left eye it was drawn distinctly to the nasal side. In the right eye the vitreous haze remains more central. It is still difficult to see clearly the fundus.

In a communication from her over the telephone yesterday, she says that she has continued to improve and was reading the evening newspaper when I called her.

#### **Preretinal, Semilunar or Subhyaloid Hemorrhage.**

DR. JOHN BROWN. Patient, male, 25 years old, with negative family history, first seen Nov. 3rd, 1924. Personal history: When he entered the army he had been assigned to a gun squad. In almost his first experience he became deaf in the right ear after gun practice. This passed away after a time, but was always easily produced again by concussions near him, and in the right ear. After he was out of the army for about a year the right ear would have periodic attacks of discomfort and poor hearing. About a year ago there was an acute exacerbation and the right ear discharged. It has continued to discharge intermittently since that time. He passed a life insurance test two weeks before his first visit to me and otherwise than the ear condition no defects were found.

Present history as regards his eyes: Wore glasses R. and L.  $+0.75 \times 90^\circ$  for a year and a half. On Nov. 2nd, 1924, while playing a phonograph he leaned forward to pick up a needle which had fallen to the floor. When he straightened up again he felt he was blind in L., but on covering his right eye he could see what seemed to be a large purple ball. He could see normally with the right eye. The following day he felt nauseated and upset. This day I saw him and examined him the same morning. Vision in the right eye 20/20. Left eye, lower field only part which was able to distinguish hand movements on account of the red blur.

Examination showed no external signs in the lids, conjunctiva, or change in pupillary reactions. With the oph-

thalmoscope the right eye appeared normal. The left eye gave a dark red reflex in the macular region. When the pupil was dilated, a hemorrhage to the temporal side of the disc, involving 4 or 5 disc diameters, appearing as a semilunar disc, appeared much denser below and thinning out above, so that the retinal vessels could be seen through it. There were two clots in the region of the superior temporal retinal vessels which seemed to be the site of the original hemorrhage. There was a refractile spot in the region of the macula which gave an impression that the hemorrhage was subretinal. In subsequent examinations the vessels of the retina were seen to pass beneath the blood clot on the lower half, and from above could be made out thru the thinner portions of the extravasations.

On Jan. 5th, the extravasation had shrunk to about  $\frac{3}{4}$  of its original size and the fluid in the upper border was less dense, but no coagulation has taken place in the blood. On testing his vision he could see 8/100 with the injured eye, but when the head was tipped to the side he could see 8/65. This relative change of the fluid level can be observed by tipping his head as one examines it with the ophthalmoscope. In these later examinations, two months after, there appears at each side some blotches of residue from the blood, which seem to be fixed in position.

*Discussion.* DR. BERRISFORD (St. Paul) said he was particularly interested in the second case shown by Dr. Brown as he had seen the patient in Dr. Brown's office not long after the onset of the trouble. The lady became ill, lapsed into unconsciousness and upon regaining her senses found herself blind in both eyes. Nothing could be seen ophthalmoscopically except a red reflex.

At the present time in the right eye can be seen large dense vitreous opacities and in the right eye a line of pigment in the retina running from the disc downward temporally. It is plainly evident from this that the hemorrhage arose to a large extent from the posterior pole of the eye, probably choroidal, as evidenced by the pigment.

The history of the case is evidence enough that at the time of illness an analogous condition prevailed intracranially (loss of consciousness). It would appear that an overwhelming intoxication of some nature was responsible for the extravasation of the blood intraocularly and perhaps intracranially.

In the first case presented by Dr. Brown, one can see a blotch of pigmentation in the retina together with depigmentation in the immediate vicinity, as if the retinal pigment had been nicely scraped away. The lesion was no doubt vascular and involved the choriocapillaris.

DR. JOHN FULTON (St. Paul) said, that thru the courtesy of Dr. Brown, he had an opportunity to examine the 3rd patient and found the fundus exactly as described by the doctor. There is a beautifully executed plate of subhyaloid hemorrhage in Parsons' Disease of the Eye. The author states that in this form of hemorrhage the prognosis is favorable, but subject to relapses. It is not like hemorrhages into the structure of the retina, which usually leave permanent atrophic spots.

#### Corneal Ulcer After Vaccination.

DR. E. R. BRAY (St. Paul) reported the case of Mr. M. J. T., age 49. Patient, in good health previous to this time, had a severe reaction to vaccination against smallpox; was sick in bed for 4 days, and on the 4th day his right eye became inflamed. When he reported to the office the right eyeball was deeply injected, the central portion of the cornea stained, and there seemed to be some infiltration in the substance of the cornea. Used argyrol, atropin, and heat, and dionin later; the pupil dilated and pain was never very marked, but the eye was still very much inflamed. Vision was hand movement at this time.

After a week's treatment I used milk injection in the muscle. This seemed to give some improvement. Had X-ray of teeth made and found one abscessed tooth, which was removed. Had a Wassermann made, which was negative. Started the use of sodium salicylate, 30 grains daily, which seemed

to have a beneficial effect. The staining of the cornea cleared up in about three weeks, and the vision is now improved to 1/20 and I am expecting this to improve a good deal more.

Special features in the case were—the coming on during the reaction from vaccination, the location and extent of the ulcer covering the center of the cornea, and its slow improvement under treatment.

#### Traumatic Prolapse of Iris.

DR. BRAY also reported the case of Mr. H. W. R., age 28. Left eye was injured by a staple, causing prolapse of the iris at outer portion of cornea. The injury happened 10 days before coming to our office. Vision of this eye was 20/30. Very little redness or pain.

Should an iridectomy be performed at the site of injury, or should the eye be left as it is?

*Discussion.* DR. FRED PRATT (Minneapolis) stated that in this case, as it is now some time since the accident, it would be impossible to make a small iridectomy. It would be better to wait until the eye is completely healed and quiet, then with a Ziegler needle knife, cut the adhesions between the iris and the cornea. A much smaller iridectomy is the result, together with being rid of the irritation due to an adherent iris.

#### Chorioretinal Lesions, Diabetes.

DR. H. J. ROTHSCHILD (St. Paul) presented an unusual type of chorioretinitis. J. B. N., male, aged 34, married, shoe repairer, came to my office Dec. 22, 1924, because of markedly reduced vision of his left eye. He had been employed in a planing mill until 2 months ago, when he entered the trade of shoe repairing. One month ago he was put at the sewing machine and since then he has noticed some blurring on doing this work. He was not aware that one eye was almost blind until an optician discovered it Dec. 22, the above date.

He has always been well except for snow blindness 18 years ago while with a surveying crew. This disabled him for about one month, but he believes his recovery was complete. Also had diphtheria 4 years ago, which at-



tack was mild and attended by no complications so far as he knows. Denies lues. No history of traumatism.

On examination V. R. 20/25, normal in every respect except for slight error of refraction. L. 1/100, fundus shows changes in the central area consisting essentially of two large white spots in and near macula, and numerous small depigmented spots surrounding them. The papilla and retinal vessels show very little, if any, change. The largest white spot has a horizontal diameter slightly less than that of the papilla and a vertical diameter somewhat greater. The upper margin ends in brush like form. There are small accumulations of brownish pigment at its nasal and interior margins. The surface is not raised.

About one-half papillary diameter to the temporal side, there is another white spot; this one long and narrow, extending in a moderate curve downward from a point on a level with the upper margin of the papilla to the horizontal portion of the inferior temporal retinal vessels below, where it ends in a wider area of mixed white and faint pigment spots. There are also accumulations of brownish pigment in places along the lateral margins, which are, for the most part, not sharply cut. There is one depigmented spot at its left, about the size of the disc, wherein a few choroidal vessels are exposed to view. The other depigmented spots are small oval or roundish, having no pigmented border and seen in association with the moderate size and small arterial twigs. These changes are in the deeper layers as retinal vessels can be seen coursing over them.

Urinalysis revealed sugar in moderate amount, which disappeared promptly on starch free diet, to return again in slight amount on addition of moderate quantities of starch. (Tests for blood sugar and more exact tests for sugar tolerance will be made.) No albumin. Wassermann blood test negative. Blood pressure 140/85. Field of vision is full for form. A central scotoma corresponds to the larger diseased area.

DR. PAUL BERRISFORD (St. Paul)

said that these cases of exudative chorioretinitis involving the macular region are always a problem from a diagnostic point. First syphilis and tuberculosis must be excluded. Focal infection is next to be thought of. Usually syphilis and tuberculosis can be disposed of and immediate steps taken to eliminate foci of infection. Teeth and tonsils will not be overlooked and oftentimes sacrificed on the most meagre evidence. Nevertheless the patient will have an absolute scotoma remaining, always, in the exudative field despite your efforts.

*Discussion.* DR. ROTHSCHILD (St. Paul) said that as to etiology, one would on first impulse think of diabetes, but there are various reasons for questioning this origin. Diabetic retinitis is seen only in older individuals. Of 82 cases reported by Nettleship (of which 59 were his own and 23 those of others) the youngest was 35 years of age. Of 62 cases reported by Foster Moore, the youngest was 39. There has never been a case reported in the literature under age of 35. Furthermore, the retinal hemorrhages of frequent occurrence in diabetic retinitis are absent here. Also the monocular involvement must be taken into account.

#### Corneal Ulcer.

DR. W. W. LEWIS (St. Paul) gave a supplemental report on the case he presented at the December 1924 meeting. (See A. J. O. v. 8, p. 229.) Dr. Lewis stated that this man's eye had been cultured about 20 times and no organisms recovered at all. Patient was also exposed to X-ray. Dr. Lewis feels that the eye is going to rupture, and that there is nothing to do but to enucleate the eye.

*Discussion.* DR. W. L. BENNETT (Rochester) stated that the case just mentioned, he felt is a Mooren's ulcer. Just why, he did not know except that it is the type of ulcer that comes about thru a slow degeneration of the subpropria of the cornea and will not yield to any form of treatment. One could cauterize them with iodine or with the actual cautery and what you lose by the cautery you gain for the ulcer. Enucleation is the only relief, he felt.

DR. LEWIS said there was just one remark he wanted to add about this case and what Dr. Benedict said about cauterizing it; that whatever he did for this eye only seem to aid the ulcer and add to their loss. It did not quite fit in with his idea of a Mooren ulcer, but it might possibly be one.

#### **Fibroadenoma of Orbit, Restoration of Socket.**

DR. W. W. LEWIS (St. Paul) also gave a short report on another case, stating that altho the case is Dr. Benedict's now, he had seen the girl originally. The case has been under observation for about 3 years. Several men saw her and were satisfied that she had a mucocele of the ethmoid. The X-ray seemed to be suggestive of this also. An ethmoid exenteration was made internally and the ethmoidal discharge stopped. For 2 years following, the process remained stationary. It started again, and Dr. Lewis did a modified Killian operation, with an incision around the brow, but could not find anything. About that time Dr. Lewis thought the patient should see some other doctor and she went to Rochester; there was found a retrobulbar tumor, not on the nasal side, but on the temporal side. Dr. Benedict will give additional history.

DR. W. L. BENEDICT (Rochester) said he saw this girl first in March 1924 after Dr. Lillie and Dr. New had gone over the nose, and could find no real reason why the nose and sinuses should be investigated any further. Certainly all that could be done was done, and then it became a process of elimination. In operating, he went in thru the brow with a large incision and feeling back with the finger in the posterior third of the orbit found a mass involving all the structures in the posterior orbit. He thought possibly he could remove the tumor without removing the eye, but he found that impossible; and as he had consent from the mother to remove the eye if necessary, he removed the eye and practically all the contents of the orbit. He had the fresh tissue diagnosed by one of the pathologists and it was his opinion that they were dealing with carcinoma. For this reason he took out

the contents of the orbit (with the exception of the lids) pretty thoroly. The fixed tissue proved to be fibroadenoma, but he could not tell the origin of the tumor.

After the removal of the orbit the tissues healed very nicely but there was marked contraction of the conjunctival sac toward the apex, a shortening of the palpebral fissure on the nasal side and considerable hypertrophy of the lids so that the whole socket was shortened. The girl was very anxious to have plastic reconstruction of the orbit, which they had undertaken. Obviously the cul de sac would have to be enlarged before an artificial eye could be inserted and worn. Dr. Benedict thought the best method of reconstruction is the implantation of fat. A glass ball, or other object of any kind could not be held in place because of the contraction of the bands on the nasal side. He went in thru the brow again at the former incision and separated the conjunctiva from the wall of the orbit as best he could so that the lids and the conjunctival cul de sac could be brought forward. He then took fat from the thigh, and planted in this cavity all the fat he could possibly push in and sewed it down with mattress sutures. The amount of fat that must be put in will vary with different individuals as it is difficult to determine the absorption. They usually figure on having a loss of  $\frac{1}{3}$  to  $\frac{1}{2}$  the amount implanted. This fat implantation was done in November, and there has already been absorbed  $\frac{1}{2}$  the amount put in. The incision was made above, forming a pocket in which the fat could be placed. Drainage must come out thru the wound or thru the blood stream. If one does not leave some avenue for the escape of fat and drainage, you may get a soft fluctuating cyst like mass that is sometimes secondarily infected and gives rise to abscess. The stitches from the nasal portion of the wound were cut early and every day this was pressed on and some liquid fat squeezed out; usually just an emulsion of fat comes out.

Dr. Benedict stated that since this case he had done two others where the eyeball was lost, with contraction of the socket, from a burn with hot metal.

He stated that the next step of the operation will be enlargement of the cul de sac. After the fat is absorbed and the place has become fairly solid, we cut in thru the upper or lower fornix where necessary, close to the lids, making the incision to the outside of the bony orbit about  $\frac{1}{4}$  inch. Then an external canthotomy is done and a lead plate 2 mm. thick is planted so as to fit closely over the orbit. This is covered with paraffin, which must be a hard paraffin. This is then covered with a Thiersch graft, usually taken from the leg. This can be stitched on the plate if desired. This is put in the socket and then the lid margins sewed together, and dressings applied for 10 days. The stitches holding the lead do no damage. At the end of 10 days the conjunctiva is cut again so as to take out the lead plate and the socket is filled with iodoform gauze in vaselin. These are nearly always infected.

Dr. Benedict stated he did one operation of this type on one man who had had a contracted socket for many years. Within 4 days after the operation the man complained of a great deal of pain, so the dressings were removed; there was tremendous swelling of the lids, and when the lids were opened about an ounce of very foul smelling colon infected pus was removed. The socket was irrigated twice a day with mercurochrome for 2 weeks. This infection in the orbit around the lead plate does not interfere with healing of the epithelium or the formation of a good socket. He would not remove the lead plate except under such circumstances, where there is a tremendous amount of pus.

The skin taken from the thigh is so thin that the hair follicles are not included, so that there is no danger of the socket filling with hair. The only precaution Dr. Benedict thought necessary is that the lead plate must be covered completely by this thin layer of epithelium so that there is a raw surface of epithelium in contact with the raw surface of the socket. Of course there will be no motion to the upper lid; there will be a constant opening of the palpebral fissure, of proper width, slightly less than on the other side, with artificial eye held in place by the use of glasses. It is usually necessary to have the eye molded or made to order.

The first step always is to get plenty of fat to fill out the cul de sac. The next is to get a deep epithelial lining to the socket.

DR. LEWIS (St. Paul) said he thought most of the members had in mind the operation best described by Wheeler, where, after exenteration of the orbit, the lids are parted as best they could be, and then with a knife a new cul de sac made in the scar tissue and lined with Thiersch graft, implanted on a mould or lead button.

Dr. Lewis felt that this plan of going thru the upper lid and entirely freeing the cul de sac behind is of tremendous value, and appealed to him very much. Going thru the upper lid and dissecting loose practically the entire cul de sac gives very much better results than trying to make a cul de sac in scar tissue. In this case Dr. Benedict will have practically the entire original conjunctival cul de sac for the glass shell and the entire amount of mucous tissue is thereby conserved.

W. E. CAMP, M. D.,  
Recorder.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

SECTION ON OPHTHALMOLOGY, NOVEMBER 20, 1924.

### Allergic Reactions in Vernal Conjunctivitis.

Dr. Louis Lehrfeld read the paper published in full on p. 368.

*Discussion.* DR. WM. CAMPBELL POSEY said that several cases of vernal conjunctivitis under his care had been subjected to these tests, but in only one were the results positive, a lad fourteen years of age, with a typical type of palpebral conjunctivitis, and complicated with asthma of years standing. The test showed him to be sensitive to horse dander and mildly so to rag weed, June grass, and two other grasses. During the past two years he has received vaccines made from the pollen of these plants and from horse dander. He has been kept away from horses and not allowed to sleep on a hair mattress. No attack of asthma has occurred since the treatment was inaugurated. As the eyes were subjected to radium treatment, it

is difficult to say whether the ocular improvement can be attributed to that source or to the vaccines. Dr. Posey said he had followed a number of cases of conjunctival irritation excited by the proximity of horses and by certain kinds of fruits, but none of these possessed the characteristics of typical vernal conjunctivitis.

DR. BURTON CHANCE thought that Dr. Lehrfeld deserved praise for the industry which he has manifested in carrying on his observations on this group of patients, and he trusted that the patients might be followed up in the spring of next year with the hope that Dr. Lehrfeld's studies toward the solving of the mystery of vernal conjunctivitis might be corroborated.

DR. EDWARD A. SHUMWAY reported in connection with Dr. Lehrfeld's cases of vernal catarrh and asthma, a case of severe lid involvement with a tendency to asthma that had been successfully treated with radium by Dr. Pancoast. The patient had also shown a marked idiosyncrasy for aspirin, 10 grains of which would cause alarming edema and bloating of the face and throat, with a rash on the face.

#### **Demonstration of Normal and Abnormal Pupillary Reflexes.**

DR. FRANCIS H. ADLER said that in order to demonstrate lesions of the pathways for the light reflexes, cats were operated upon, and lesions created in various parts of the arcs. After degeneration had taken place the animals could be utilized by the student for localizing the various lesions. (See p. 287.)

#### **Test Chart Screen and Familiar Test Chart, With Letters Reoriented.**

This paper, read by Sydney L. Olsho, is published in full. See p. 192.

#### **Development of Tobacco Amblyopia.**

DR. G. E. DE SCHWEINITZ briefly referred to disturbances of metabolism, gastrointestinal sepsis and toxemia derived from areas of focal infections as contributing factors in the development of tobacco amblyopia, and to the earlier and later literature on this subject (observations, for instance, of Horner, Sachs, Edsall and himself), and reported some clinical histories of tobacco amblyopia in elderly subjects (sixty and more years

of age), who had smoked, sometimes moderately, for forty years or more with impunity, without changing their habits, or the quality or quantity of the tobacco, but whose eyegrounds exhibited in moderate degree the so-called senile retinal angiosclerosis (reduction of the apparent calibre of the veins and arteries, their lumina remaining regular; no venous compression, no hemorrhages or exudations, the discs being temporally pallid, and slight sclerosis of the choroidal vessels being visible) who acquired after this long period of immunity the characteristic papillomacular scotomas. Altho he recognized the influence of the so-called cumulative effect of tobacco as a possible explanation, he regarded it as an unsatisfactory one, and expressed the belief that sclerosis of the small optic nerves and retinal nutrient vessels should be regarded as the contributing factor. He compared the effect of such vessel changes on the resisting power of the nerve tracts involved to that exercised by metabolic and other toxins in this respect, as had been described at the beginning of his paper.

He described the distinctive features of the tobacco scotoma and referred especially to the work of Traquair, Doyne, Sattler and to some recent observations of his own.

#### **Senile Changes in the Optic Nerves, So-called Senile Amblyopia.**

DR. DE SCHWEINITZ, after a brief reference to the literature of this subject and some allied conditions, mentioned Uhthoff's recent description of acute neuritis due to cerebral arteriosclerosis, rapid in onset and prompt in subsidence, with a resulting optic nerve atrophy and shrunken retinal vessels; to central scotomas occurring in the subjects of arteriosclerosis; and especially to a type observed in elderly persons, characterized by atrophic pallor of the optic nerve, without shrinking, sometimes associated with a relative scotoma of low intensity, with senile retinal arteriosclerosis, as before described, and only moderate reduction of visual acuteness and depression of the peripheral field.

Such cases, especially in their slighter manifestations, he thought were similar to those recently reported by Salzer of Munich, and when first noted they did



not ophthalmoscopically depart far from normal appearance. Often mistaken for progressive atrophies from other causes, the optic nerve pallor increased, but a definite atrophy of the fibers did not take place, or developed only with notable slowness.

E. Fuchs' pathologic investigations, especially those which had revealed arteriosclerosis of the small vessels in the optic nerve, and the presence of amyloid bodies which took their origin in the neuroglia and pressed upon the nerve fibers, or separated them, were discussed; and also Salzer's suggestion that small, invisible hemorrhages might be responsible etiologic agents. He believed, in spite of the fact that the condition was well known, that this so-called senile optic nerve atrophy, or atrophic pallor, was not infrequently unrecognized as to the true causative factor, being attributed to conditions which were not operative.

#### Ocular Disorders Probably Due to Prostatic and Bladder Nonvenereal Infections.

DR. DE SCHWEINITZ, after referring to Swineburne's statement that nonvenereal infections of the prostate were destined to be regarded as almost as common as chronic tonsillitis, discussed briefly a special form of keratitis due to colon bacillus infection of the bladder, and prostate (also the intestines), as it had been described by Lawson, Browning and Mcleish. Altho no examples of keratitis exactly corresponding to this type had been encountered in personal experience, he had seen cases, which were quoted briefly, where a nonvenereal prostatitis had apparently been in part, if not entirely, responsible for a keratitis which clinically suggested a neuropathic type, and to forms of interstitial corneal infiltration, associated with, or following, iridocyclitis, streptococci and staphylococci being the offending organisms. These, as he had noted them, had been of long duration, had been subject to many exacerbations, and had resisted the usual remedies, but had been markedly relieved, and in one instance entirely cured, by elimination of the prostatic infection (massage, etc.) and autogenous vaccin therapy.

He also described in general terms various types of so-called senile macular

retinochoroiditis which has been similarly favorably influenced in the sense of a cessation of crops of small hemorrhages, altho in no instance did degenerated areas resume function, or pigment spots, etc., disappear. He referred to the very early stages of senile macular retinochoroiditis, or to that period when ophthalmoscopic changes were vague, and visual acuteness was not notably depreciated, but when metamorphopsia and relative blue scotomas indicated the beginning of future grave events, as the period when the elimination of focal infection in the prostate or bladder was important, or, indeed, its elimination from any of the other well known areas, notably the teeth, and even the edentate gums of elderly subjects, as in the sites of past extractions of diseased teeth there may be underlying granulomata and cysts which contain the same bacteria which were present in the abscessed teeth.

The prostatic condition of all of his cases had been studied by Dr. Alexander Randall, and the general examination had been made by Dr. O. H. Perry Pepper.

Dr. de Schweinitz recognized that his cases were too few in number to permit more than suggestions, and also recognized that the effect, or apparent effect, of autogenous vaccin therapy might be ascribed to an influence similar to that created by the intravenous injection of foreign proteins, and that it was not specific. But he thought the subject worth further investigation, especially in very early stages of senile macular retinochoroiditis, in the hope of ascertaining methods of treatment which might possibly check the progress of this intractable infection, and in spite of the fact that it was extremely difficult to determine the evaluation of medicinal agents, especially vaccin therapy. To some of these observations he had referred in a recent lecture before the Societe française d'Ophthalmologie, but as the paper had not yet appeared in print, he had ventured to incorporate them in the present essay, as abstracted above.

*Discussion.* DR. WILLIAM ZENTMAYER stated, that in 1922 in reporting three cases of so-called tobacco-alcohol amblyopia, he felt that this was a manifestation

of arteriosclerosis and that arteriosclerosis is probably a contributing factor in the production of the amblyopia. When one considers the relative infrequency of tobacco-alcohol amblyopia, stated by Weeks as occurring but four times in 10,000 private patients, contrasted with the almost universal use of tobacco, it would seem as tho there must be some individual predisposition.

In consulting the literature more recently he found that Scalinci and Kruger also believed that the arteriosclerosis which they found present in their patients was not to be attributed to the toxic agent but that it was an independent condition, and an important factor in the causation of the amblyopia.

In view then of the relative infrequency of eye symptoms among habitual users of tobacco and alcohol, of their comparatively late appearance in life, of the marked difference in degree of impairment of vision of the two eyes, of the presence of a low grade retinal arteriosclerosis in many of the patients, and of the not infrequent appearance of retinal hemorrhages, it would seem to him that a causal relation between arteriosclerosis and tobacco-alcohol amblyopia is probable. (See p. 365).

Dr. Zentmayer said also, that in the past two years he had seen at least three cases of uveitis which were probably due to infection from the prostatic gland. One was in a man about 50 years of age who had lost the vision in the right eye thru repeated attacks. When first seen by him he was suffering from an acute recurrence, and the vision in the other eye was reduced to 2/60. He was placed in the hospital and under energetic treatment the vision in about five days was brought back to 5/30. A urologist was then asked to see him and in the course of his examination massaged the prostate. Some hours later there was a violent exacerbation of his symptoms as a result of which the vision was reduced to light perception. He ultimately made a good functional recovery but there remained serious sequellae.

Another case was in a man also of about 50 years of age, who in the course of a treatment for prostatic inflammation, including irrigation and massage, developed an iritis. The urologist felt himself competent to treat the eye con-

dition and ordered atropin. The result was that many posterior synechiae formed, producing excruciating pain which demanded attention. He cautioned the urologist against massaging the prostate but nevertheless, after the eye had been quiet for several days, he evidently considered it safe to return to this procedure. As a consequence there was a severe relapse. While this may have been a coincidence these observations are in line with what we have all seen after the extraction of an infected tooth, or the liberation of pus into the system following other operations.

DR. EDWARD A. SHUMWAY cited a patient who had suffered with repeated attacks of keratoiritis of dendritic type, in which the most likely focal cause seemed to be in the prostate, as he had had joint involvement, and a history of gleet. Massage of the prostate showed a discharge, but no gonococci. Autogenous vaccines made from the organisms present, and also injections of gonococcus bacterin failed to effect a cure, and the attacks continued, a warning that all possible foci should be eradicated in dealing with an ocular inflammation, in which eyesight was threatened.

He said also that he had treated several remarkable cases of superficial retinitis in young, healthy students, in which a rapid spread of the process made the prognosis gloomy. In both instances tonsil infection was the sole cause found, and their removal was followed by prompt subsidence of the process and return to normal vision; a further lesson that such cases should be actively treated after thoro examination from all angles, and no case considered hopeless until it had been adequately treated.

DR. H. MAXWELL LANGDON stated that at the American Ophthalmological Society meeting last June, Dr. Feingold presented a series of cases of central retinal changes in elderly people. In one case there were macular exudation and recurrent hemorrhages, and, except for a moderate arteriosclerosis, nothing definite could be found which might serve as a cause. The right eye became slightly involved, and then as an empiric measure high intestinal lavage was instituted with apparent complete checking of the course of affection in the right eye, with im-

provement of vision of the left eye. He mentioned this, as it seemed well to bear in mind that the intestinal tract may be the site of the infection which is causing the ocular disturbance as well as those foci which are more commonly thought of.

DR. DE SCHWEINITZ, closing the discussion, said that Dr. Zentmayer's observations on the association of retinal hemorrhages and tobacco amblyopia, which he had reported years ago, and to which, since then, other investigations had been contributed, were important additional evidence that arteriosclerosis may be a contributing factor in the development of this type of visual defect, altho the manifestations were of a character different from those which had been emphasized in the paper.

It was well known that massage of the prostate was sometimes followed by an exacerbation of a focal inflammation, exactly as a removal of an abscessed tooth or a septic tonsil might be, and often was responsible for a fresh outburst, for instance, of an iridocyclitis. Indeed, this very experience was regarded by some observers as an indication that the responsible focal infection had been uncovered.

Dr. Langdon did well to remind the Section that the intestinal tract was an important area from which septic products proceed and produce metastatic ocular inflammations, but Dr. de Schweinitz hardly thought this source was being neglected. Dr. Langdon's point, however, was well taken in that even where the intestines had been thoroughly examined and submitted to various irrigation and other processes, certain pockets of septic material might be missed, which, indeed, might well be the most important factor.

He again emphasized the possible value of eliminating focal infections, notably those in the prostate and bladder, in the management of the early stages of so-called senile macular retinopathy, but he fully recognized the difficulty of satisfactorily proving the relationship to which he had referred.

#### **Demonstration of Pictures for Use with the Camerascope.**

DR. EDWARD A. SHUMWAY showed completed sets of pictures for use with

the "Camerascope," a simple stereoscope for fusion training. These were three in number, the first a series of colored sketches to develop simultaneous vision and later fusion; and two sets of photographs, mostly of animals, all of the pictures having been chosen to hold the interest of the children.

#### **Demonstration of a Large Bifocal Operating Glass.**

DR. SHUMWAY demonstrated also a large bifocal operating glass. The bifocal addition was sph. plus 4 d. and was 20 mm. high, reaching the optical center of the 40 mm. round lens. The combination gave a large field, with plenty of magnification for cataract operations, etc., and yet gave plenty of room for distant vision above. Dr. Shumway explained the method of cutting the glass from the original ultex blank, and said the usual width of the bifocal disc was 32 mm. The vertical height could be made still greater, and such a lens, from 24 to 26 mm. high, extending above the optical center of the distance portion, could be of great use to a musician, such as a pianist, who needed to see clearly, also at a distance, in accompanying a singer; an organist in directing a choir; or an artist painting from a model or a landscape. Dr. Shumway also showed the lenses, with a central bifocal disc, which could be used by nose and throat men, in connection with the head mirror.

*Discussion.* DR. H. MAXWELL LANGDON said it might be of interest to mention the new one piece trifocal glass in which the distance and near segments are separated by an intermediate strength, about 5 mm. wide, that is ground only sph. plus 1.37 stronger than the distance glass. At present this is the only intermediate addition which can be obtained. Inasmuch as it is not until a person requires an addition of a plus 2.00 or more for near work that the intermediate strength becomes of great advantage, this is a fairly satisfactory combination.

DR. WM. ZENTMAYER said that, in considering this subject of lens helps, he had found great assistance in using the Zeiss binocular loup, which fits so closely to the eye that it is impossible to wear glasses when it is being employed, and to have his refraction correction perma-

nently mounted behind the convex lens of the instrument. If one has a high astigmatism the visual acuity is cut down considerably unless one has the correction mounted in the loup.

DR. FREDERICK KRAUSS stated that in the use of the head mirror for throat and nose work, he had found it best to have the added correction placed in a cell with a broad base which is then attached to the metal back of the head mirror. In this way, the correction is always in place and the need of an extra pair of glasses obviated.

DR. MARY BUCHANAN showed a pair of spectacles made by Mr. Alfred Bender consisting of cemented bifocals sph. plus 5 combined with 5 deg. prism base in, on the distant correction. These are useful in removing minute foreign bodies from the cornea, and in the discission of capsular cataract, as they permit good distant vision, they are better than a binocular loup.

As an improvement, Mr. Wm. Wall produced a pair of small, 30x20 mm. near lenses, incorporating the sph. plus 5 combined with 5 deg. prism in an eye glass mounting. The glass is dropped so low that the upper border corresponds to that of an ordinary bifocal. The eye glass mounting is so small that it can be carried conveniently.

In closing, Dr. Shumway said that Dr. Krauss's plan of having a presbyopic lens in front of the opening in the head mirror was satisfactory, in looking in the ear or nose, where only one eye could be used, but in mouth and throat examinations, a better stereoscopic view would be obtained if both eyes were corrected by the bull's eye glass.

#### Recovery of Vision Under Galvanism.

DR. S. LEWIS ZIEGLER presented a patient aged 70 years, to show the end result of embolus of the central retinal artery, treated by galvanism for about nine months, the vision having been restored to what is practically normal. The same case was mentioned in the discussion at the February meeting as starting with a vision of 1/200, eccentric, in October, 1923, and progressing to 20/70, in January, 1924, under positive galvanism. As soon as the clot was absorbed and the disc showed pallor the current was reversed to the negative pole in

order to stimulate the function of the nerve. It was interesting to watch the "pinking" or vascularization of the nervehead, and to note the rapid improvement as soon as the line of vision had passed the center. Bulbar massage was instituted for the first month. A large central scotoma was observed in the first field, but this soon disappeared. At the time the patient was discharged in June, 1924, the vision was 20/20 pt., and J-1 pt., with fields widened to 50, 40 and 30 degrees. This has held steady ever since. An effort will now be made to increase the fields of vision. The results gained in this and similar cases should demonstrate the unwisdom of uttering a "hopeless prognosis" in cases of embolus.

C. E. G. SHANNON, CLERK.

#### COLORADO OPHTHALMOLOGICAL SOCIETY.

JANUARY 17, 1925.

DR. MELVILLE BLACK, Presiding.

#### Descending Neuroretinitis.

G. F. LIBBY, Denver, presented a man aged forty-six years who had come on December 1, 1924, on account of marked impairment of vision of the left eye during the previous five days. The vision was 5/20, altho one year before it was known to have been normal. Ophthalmoscopic examination was negative. There was an absolute central scotoma for green and red, but the blind spot was not enlarged. Three devitalized and infected teeth were extracted, and the tonsils were removed. Dr. G. R. Warner had found the ethmoids, sphenoids, and other sinuses normal, and the diameters of the optic foramina within the limits considered normal by Dr. L. E. White. The Wassermann test was negative, and the heart, blood pressure and kidney were reported normal. By December 13th the vision in the affected eye was reduced to about 1/200. On January 2, 1925, the disc and part of the adjacent retina were moderately edematous, and three days later the protrusion of the disc was four diopters, with vision completely abolished. On January 9, with less edema, there was eccentric vision of 5/20. On January 17, vision was 5/15,



and color perception good. (Two days after the meeting Dr. Libby reported that the vision of this eye was two-thirds of normal.)

*Discussion.* G. R. WARNER, Denver radiographer, (by invitation) explained a number of radiograms which he had taken to demonstrate the measurements of the optic canals.

F. R. SPENCER, Boulder, remarked that many of these patients with optic neuritis had hyperplastic sphenoidal and ethmoidal sinusitis.

DR. LIBBY (closing). If in a case of optic neuritis of active type, the radiograms show a very small optic canal, optic atrophy is more likely, and the ethmoids and sphenoids should be emptied promptly.

### **Congenital Atrophy of Retina.**

C. O. EIGLER, DENVER, presented a boy aged nine years, whose vision without correction was 5/60 in each eye, and with correction 5/30, and whose fundi were remarkable for apparently complete absence of retinal pigment. The retinal vessels were narrow, and the discs pale.

*Discussion.* W. C. FINNOFF, Denver. The absorption of retinal pigment is very striking. Altho the boy's complexion is not very fair, the choroidal vessels are clearly visible everywhere. In the periphery are large spots which look like old exudate. The vessels are not contracted, which would be consistent with some change in the ganglion cells. There is no history of night blindness, which is against retinitis pigmentosa.

EDWARD JACKSON, Denver, was disposed to think that the condition might be congenital.

J. A. PATTERSON, Colorado Springs. We do see people whose fundus pigment does not match the complexion or color of the hair.

MELVILLE BLACK, Denver. The absence of retinal pigment is as marked as one would see in an extreme blond.

W. H. CRISP, Denver. But there is more pigment between the choroidal vessels than one would find in an extreme blond or near albino.

### **Tuberculosis at the Macula.**

W. C. FINNOFF, Denver, presented a man aged thirty-one years who had

had from time to time since 1916 mild attacks of disturbed vision of the right eye, with fine vitreous floaters, and more recently some small cortical lenticular opacities. When the patient was first seen by Dr. Finnoff in October, 1924, there was a round patch of chorioretinal degeneration, about three disc diameters across, to the temporal side of the macula, and consisting of white scar tissue and pigment. There were two smaller patches of atrophy above and two others below the macula. Only one of these, a dirty-yellowish area faintly bordered with pigment, below the macula, suggested activity. There was probably mild tuberculosis of the right apex, and on this account tuberculin had not been resorted to, altho the eye lesions were probably tuberculous. The left eye was negative.

*Discussion.* MELVILLE BLACK, Denver. Have you any confidence in the complement fixation test for tuberculosis?

DR. FINNOFF. I have not much more confidence in the complement fixation test than I have in a von Pirquet for such a case.

### **Night Blindness.**

J. A. McCaw, Denver, presented a youth aged nineteen years who had night blindness and a contracted visual field. A paternal uncle had a similar condition with a high refractive error. The disc was grayish and its outlines not very distinct. The choroidal pigment was rather freely visible, and the retinal vessels were contracted. The corrected vision was right 5/15, left 5/7. The vision had been about the same in 1916, when the patient had first come for refraction.

*Discussion.* G. F. LIBBY, Denver. The case may perhaps be regarded as one of retinitis pigmentosa sine pigmento. It is remarkable that for so many years he has retained the same vision.

W. H. CRISP, Denver. The case may lie outside of definite classifications. It seems to have gone a long time without change for a case of retinitis pigmentosa, either with or without pigment. It may be a case of congenital syphilis.

**Uveitis from Focal Infection: Cataract.**

D. A. STRICKLER, Denver, presented a woman aged fifty-seven years who had had several attacks of severe inflammation and disturbance of vision of each eye. In the earlier attacks there had been vitreous opacities and slight clouding of the lenses. An atrophic area developed in the right iris. In October, 1924, she had had a sudden severe attack of iridocyclitis. An old root of a tooth (under an artificial plate), the existence of which had previously been concealed by the patient, was extracted and showed a large pus sac. On January 3, 1925, there had been another severe attack, in association with a tonsillar abscess, and vision had since fallen to R. 2/200, L. large objects. The tension was right 28, left 20 mm. Both lenses had become distinctly cataractous.

**Mooren's Ulcer.**

MELVILLE BLACK, Denver, presented a man aged seventy-four years who had come in October on account of a corneal ulcer which had gradually involved the whole cornea. The ulcerated area had been covered by a yellow exudate which could be washed or wiped away, exposing a red granular area beneath. The complete destruction of the superficial layers of the cornea had perhaps taken about six months. Unsuccessful treatment had included an autogenous vaccine (the pneumococci seeming to be the dominant germ), milk injections, intravenous sodium salicylate, iron and manganese, mercurochrome, chemical and actual cautery, and pasteurization. The right eye had been destroyed by ulceration a year or so previously. The more active agents had all seemed distinctly to hasten the process.

**Conjunctivitis; Scar Formation.**

L. L. HERRIMAN, Alamosa, presented a youth whose palpebral conjunctiva showed a pale, smooth hypertrophy somewhat resembling trachoma, and with slight purulent secretion. There was a small scar on the cornea from an old ulcer. There was some photophobia, and it was difficult for the patient to raise the upper lids. Both eyes had been equally involved

at the beginning, but the changes were now principally in the right eye. There were some signs of scar tissue in the culs-de-sac.

*Discussion.* J. M. SHIELDS, Denver, suggested the use of radium, because of a possible analogy with vernal catarrh.

W. H. CRISP, Denver, suggested that, as to the diagnosis, syphilis and pemphigus should be considered.

WM. H. CRISP, SECRETARY.

## OPHTHALMOLOGICAL SECTION OF THE BALTIMORE MEDICAL SOCIETY.

DECEMBER 4, 1924.

**Relation of Intraocular Pressure to Vascular System of Eye.**

DR. FRANCIS H. ADLER, of Philadelphia, read a paper reviewing the status of our knowledge of this subject and including a report of some of his own experiments. This paper will appear in full in the A. J. O.

Dr. Adler called attention to the change in the character of recent research on intraocular pressure, as contrasted with that prior to 1914. The attention of most investigators during the past ten years has been centered on the blood vascular system—the relation of intraocular pressure to changes in the various factors of the blood as it passes thru the eye.

After an outline of the physical principles involved, the following factors were discussed, and by means of photographic records it was shown how each factor influenced the pressure within the eye. The factors discussed were as follows:

1. General arterial pressure. The changes occurring in intraocular pressure with alterations of general arterial pressure are due essentially to the change in caliber of the intraocular blood vessels, and not to the interposition of any second mechanism, as rate of fluid formation. This is proved by:
  - a. The qualitative reproduction in the intraocular pressure record of even the very smallest fluctuations in the blood pressure curves, i. e., the pulse.
  - b. The extremely short latent period which elapses between any change

in general arterial pressure and intraocular pressure.

2. Changes in size of the intraocular blood vessels. It is possible to change intraocular pressure without any change in general blood pressure by altering the caliber of the intraocular blood vessels. By suitable means the intraocular pressure can be changed in a direction opposite to that of the general blood pressure. This can be done in the following manner:

a. Drugs which dilate or constrict the blood vessels in the eye, as adrenalin, barium chloride, amyl nitrite.

b. Stimulation or section of vasoconstrictor fibers in the cervical sympathetic.

c. Alterations in venous pressure of the head area.

3. Properties of the blood.

a. Total osmotic pressure of the blood. Alterations in the osmotic pressure of the blood cause pronounced changes in intraocular pressure. Perfusion of the blood vessels with a hypertonic solution causes a gradual decrease in intraocular pressure, while a hypotonic solution increases the pressure. It can further be shown that the changes in intraocular pressure due to changes in general blood pressure can be greatly modified by altering the osmotic pressure of the blood.

b. Osmotic pressure of the proteins.

A decrease in the osmotic pressure of the proteins causes an increase in intraocular pressure, even tho the osmotic pressure of the blood as a whole is kept constant.

**Discussion.** Dr. C. H. Clapp showed microscopic sections of glaucomatous eyes, and emphasized his belief that an obstruction of the filtration angle was an essential factor in the causation of glaucoma.

#### Glaucoma and Necrosis of Iris.

DR. JONAS S. FRIEDENWALD showed a section of an eye, with subacute glaucoma and almost complete necrosis of the iris. Evidently in this eye the intraocular pressure was sufficiently high to obstruct the blood flow in the iris, tho not the blood flow in the ciliary body, choroid or retina.

JONAS S. FRIEDENWALD, EDITOR

## THE NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

MONDAY, DECEMBER 15, 1924.

CHAIRMAN, DR. ROBERT SULLIVAN.

### Panophthalmitis.

DR. ROBERT J. WARNER reported on the case of B. E., white, female, age 23. One brother had good vision. Each of two other brothers had had enucleation of one eye for unknown cause. A sister had a cataract operation in one eye at the age of three and enucleation of the other eye at the age of 16. The patient had never had any light

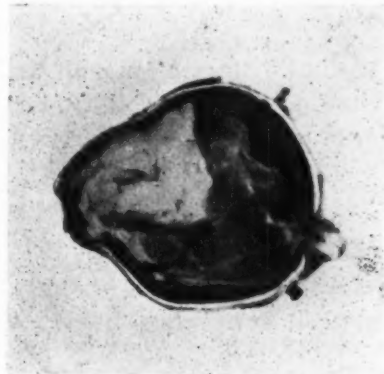


Fig. 1.—Section of eyeball, Warner's case of panophthalmitis.

perception in either eye. Her left eye was removed at the age of three for an unknown cause. On account of her mental condition it was impossible to obtain a more accurate history.

The patient first saw Dr. Warner December 4, 1924, complaining that for a week past the right eye had been very painful, requiring narcotics daily for relief. Examination showed the following: R. No P. L. Immobility of the eyeball, total anterior staphyloma with numerous corneal scars, and blood vessels, and conjunctiva extended partially over on the cornea. Chemosis of the bulbar conjunctiva and marked redness of the palpebral conjunctiva. No structure could be seen back of the cornea. The eye had the appearance of a case of old conjunctivitis neonatorum.

The patient was sent to the hospital, and the following day at the time of

operation the chemosis and swelling of the lids were more marked than the day before. Under somnoform-ether anesthesia the right eye was enucleated. When the conjunctiva was picked up with the forceps a small perforation occurred in the center of the staphyloma and aqueous was expelled. This same condition evidently had occurred about one week previously and accounted for the recent infection. The patient made an uneventful recovery and was free from pain.

*Pathology.* Section of the eye (see Fig. 1) was made by the Department of Pathology of Vanderbilt School of Medicine. The retina is detached and the lens destroyed. The vitreous and aqueous are filled with pus. Diagnosis: Panophthalmitis.

FRED E. HASTY, EDITOR.

## ROYAL SOCIETY OF MEDICINE. SECTION OF OPHTHAL- MOLOGY.

Meeting of Jan. 9th, 1925.

President, SIR ARNOLD LAWSON.

### Bitemporal Hemianopia Due to Fracture of Skull.

MR. EGERTON GRAY exhibited a patient, a man, who fell 12 feet and fractured his skull, in 1911, the fracture being of a depressed character, in the frontal region. He lost consciousness and had severe epistaxis. Recovery of consciousness was at once followed by a complaint of diminution of sight. The man had had severe headache, and in certain postures there was diplopia; also smell was defective. Pupils were equal and active, and there was an absence of color scotomata. Neither albuminuria nor polyuria was present, and sugar tolerance was not increased beyond the normal. The man showed nystagmoid movements of the head.

*Discussion.* MR. J. H. FISHER considered that in order to cause the clinical picture the fracture must have extended across the roof of the orbit and involved the cribriform plate and the olfactory lobes, at the same time implicating the optic chiasma.

### Congenital Blindness Without Obvious Cause.

MR. RAYNER BATTEN showed two children, aged respectively 6 and 3 years (brother and sister) who were born blind, but he had been unable to detect any cause for this. Otherwise the children were healthy and well formed, and there was no evidence of congenital syphilis or of nervous disease. Wassermann, in both children and mother, was negative. In the boy there was plus 6 of astigmatism, and in one eye of the girl there was hypermetropia, and in the other, hypermetropic astigmatism. Both demonstrated a slow nystagmus.

*Discussion.* MR. LESLIE PATON referred to similar cases which he had been observing for a number of years, and which, at an early stage, also had head nodding and nystagmus. In those cases there were fine macular changes.

MR. J. H. FISHER pointed out that the boy had pallor of the disc, and the girl, thread like retinal vessels, while in the lower part of the fundus some of the vessels were sheathed with pigment.

MR. M. S. MAYOU spoke of a case aged 18 who was born blind and whose discs seemed very similar to those of Mr. Batten's cases. Two years after he saw her, she died following an accident in the street, and the postmortem examination revealed large cysts occupying the occipital lobes, and the cysts consisted of a distension of the material of the posterior horns of the lateral ventricles.

DR. FRANCESCHETTI (of Zurich) said he thought it likely that these children had a familial disease, and that the absence of vision might be a result of color blindness, in which also a fine nystagmus was often observed.

### The Susceptibility of Nocturnal Animals to Ultraviolet Radiation.

PROFESSOR SIDNEY RUSS, D. Sc., (of Middlesex Hospital College) read a paper on a research in which he was engaged with Sir Arnold Lawson, on the susceptibility of nocturnal animals to ultraviolet radiation. It was instigated by the question, propounded during the War, as to the possibility



of improving the night vision of Naval officers and ratings, seeing that operations had then to be carried on under minimal lighting, and keen perception was very valuable. It was suggested that by supplying to the eyes of these men minimal doses of light from the blue and violet end of the spectrum, those eyes might have more acute vision than the normal for dim and distant objects. This was tried, and resulted in an increased acuity of about 15% in moderately rested eyes. It was found that the compass charts of the first Zeppelin which was brought down in this country during the War were illuminated by light from this end of the spectrum. A further question was as to how transparent the eye was to different regions of the spectrum. In human eyes procured for this purpose a small window was cut at the back of the retina and a quartz plate cemented on to that, so that the rays passing thru could be analysed; and a question Dr. Russ set himself to solve was the relative transparency of the eye to radiations from different regions of the spectrum. For this purpose it was sufficient to have, as the source of light, either an arc light of tungsten, or an ordinary mercury lamp. The object was so focused that the spectral lines were suitably dispersed by the prism in operation.

The first experiment showed the human eye to be very absorbent to any radiation beyond a wave length of about 3,800, and the question here was as to whether acuity of vision under dim lights was due to the transparency of the eye to radiations of shorter wave length than 3,800. If so, it should show itself in a study of the behavior of the eyes of nocturnal animals. The same process was therefore gone thru in a case of animals' eyes kindly supplied by the authorities of the "Zoo." The result Prof. Russ depicted on the screen in the form of spectrographs, and there was seen to be a remarkable difference in the degree to which these ultraviolet radiations were transmitted by the eye as a whole. The eyes of the ox, the cat, the owl, the tiger were used, and it was found that the nocturnal animals had, in general, a very marked transparency to rays which

apparently were not transmitted thru the human eye. There was a considerable absorption of radiations within the range of normal visions. The night owl showed a considerable range of radiations capable of reaching the retina transmitted thru the various media; there was also a definite range in the tiger's eye, but not so great as in the night owl. Some animals, such as the tiger, relied partly upon scent, and not entirely upon vision, but that was not, he understood, the case with the night owl. This large range he thought contributed considerably to the vision, and it was clear that shorter wave lengths gave sharper images than did waves of other parts of the spectrum. Increased time of exposure did not result in any more radiations getting thru.

THE PRESIDENT suggested that there were three possibilities. The first was, that extra susceptibility to ultraviolet radiation might increase the consciousness of light in nocturnal animals, so that they were able to hunt successfully in a light so dim that human beings would find it practically useless. The second was, that there might be a greater power of image formation, the longer spectrum which was visible giving to the animal a keener image. Or, thirdly, the effect might be exerted in both those directions. Professor Russ' research just described seemed to constitute the best explanation yet advanced. It seemed a possible explanation why people with apparently similar emmetropic refraction, differed so widely in their power of image formation. Perhaps people with keenest vision were those who were extra susceptible to ultraviolet radiation. People afflicted with night blindness might suffer from a lack of ultraviolet appreciation.

SIR JOHN PARSONS, F. R. S., referred to previous work done on rabbits' eyes by himself, by Fowler, and by E. K. Martin, which did not seem to agree, in respect of the human eye, with that done by Professor Russ. A great difficulty in determining the absorption to various wave lengths by the cornea, or by the lens, was that caused by the refractive effect of the tissues themselves. And a good deal of alteration

was wrought by the fluorescence produced by the lens. The work of sensitising the eye by dosing it with small quantities of radiation from the blue end of the spectrum was of much interest, and he spoke highly of a piece of work done in this direction by Professor Frank Allen, of Winnipeg. The speaker did not feel sure that if short wave length radiations got into the eye they would increase its sensitivity and the acuity of its vision. The eye produced chromatic aberration, and all the radiation could not be focussed at the same time; what was usually done was to focus for the yellow region. It was a different matter with monochromatic illumination.

PROF. F. T. G. HOBDAY (veterinarian) said that Australian horses were selected for night work in Palestine because they did not have night blindness. He thought this research could be usefully continued on wild horses' eyes, such as existed in the Pampas of South America.

PROF. RUSS, in reply, said that after the general inquiry he had outlined, the eyes were separated out into their components and the latter separately tested. The lens was found to be the most absorbent of all the eye tissues, the cornea coming next in this property. The difference in the range of function in the various eyes tested he thought must be due to a varied range of transparency. The lens took on a marked fluorescence, and fluorescence argued absorption.

#### **Inflammatory Pseudotumors of the Orbit.**

MR. F. A. WILLIAMSON-NOBLE explained that the term set out in the title had a clinical rather than a pathologic significance; it caused proptosis, limitation of movement, increase in bulk of orbital tissues, and perhaps swelling of the lids. There was a slow onset, and none of the usual signs of inflammation. Microscopically, the orbital contents, if removed, might strongly suggest tumor. Benedict and Knight were inclined to attribute these pseudotumors to focal infection elsewhere, which had been overlooked in the absence of symptoms and leucocytosis.

But the evidence must be carefully sifted, and this should not be made a sort of scrap heap for otherwise undiagnosable conditions. Birch-Hirschfeld made three useful groups of this condition. In the first he placed cases in which the recovery was spontaneous, or took place after the use of iodid of potassium, mercury or quinin. In the second group an operation was performed without finding any tumor. The third group embraced the cases in which the macroscopic appearance of the orbital contents suggested tumor, but the microscope revealed a chronic inflammatory mass.

The first case related may be taken as a good example of the condition. It was that of a man, aged 25, who in July last attended hospital with marked proptosis of the right eye, and much conjunctival injection. Movements were full and normal. Rhinologic examination was negative. He was treated with mercury and iodid at once, without awaiting a Wassermann test. Three weeks later there was some limitation of movement in the right eye, and the proptosis was more marked. With glasses, vision in both eyes was 6/12. A month later he was taken into the hospital, and mercury inunctions and potassium iodid were continued for a further fortnight, but without reducing the proptosis. Exploration revealed a hard mass of tissue in the orbit, and no pus. Exenteration was performed a week or two later. He showed a photograph of the macroscopic appearance; there was a large white mass within the cone of muscles, moulded closely over the posterior surface of the sclerotic and quite surrounding the optic nerve. The nerve itself did not seem to be affected. The vessels showed great thickening, both the intima and the adventitia; in some instances this caused obliteration of the vessels. This was, no doubt, a gumma. In a similar case reported by Hine the Wassermann was negative, and, concerning the value of the Wassermann test, Harrison stated that it was frequent to obtain a negative reaction in cases of syphilis when only a small syphilitic lesion was present, and that help in doubtful cases was

sometimes derived from a provocative injection of salvarsan or a derivative.

The second case was that of a man aged about 50, who, following influenza, developed what appeared to be a lymphoma. The condition seemed to have been predisposed to by the lowered resistance due to the influenzal attack.

The remaining case of the condition was one in which a mass of young connective tissue formed as a result of irritation induced by the presence of cholesterin crystals. This was inflammatory only in the sense that it represented the reaction of tissue to injury.

The preoperative diagnosis and treatment of the condition was very difficult. The presence of lymphocytosis could not always be relied upon, as in two cases reported this was absent. The diagnosis involved a consideration of all the possible causes of proptosis, and he suggested that there

should be an examination of the urine, especially for sugar. Also a Wassermann test, and if this proved negative, repeated after a provocative dose of salvarsan. Complement fixation in regard to tubercle should be done, and a differential blood count, with blood-coagulation time. And there should certainly be a search for focal infections, with radiography of teeth and sinuses. Always the possibility of early Graves' disease must be considered, and an exploration should precede a decision to extirpate the orbital contents.

MR. LINDSAY REA related a severe case of his own of similar nature in which the basis was syphilitic, tho the patient denied infection. Vigorous antiluetic treatment—novarsenobillon, iodid of potassium and mercury—restored the eyes to normal and the vision at the end of the treatment was 6/6.

H. DICKINSON,  
REPORTER.

### OPHTHALMIC INSTRUMENTS OF SCIENTIFIC PRECISION.

This Section of the AMERICAN JOURNAL OF OPHTHALMOLOGY is intended primarily to present to the Ophthalmic Public the mechanics and use of the modern accepted instruments of precision. These are to be described and illustrated from a purely impersonal standpoint without clinical claims and apart from all commercial taint. It is the hope of the Editor that any reader who has had especial experience with any particular instrument will offer the benefit of his knowledge. However, the Editor reserves the right to wield a healthy blue pencil in order that the contributions may conform to the aims.

H. S. G.

#### COLOR LANTERN OF HESS.

HANS BARKAN, M. D.

SAN FRANCISCO, CAL.

This apparatus serves to establish with rapidity anomalies of red and green vision, (anomalous trichomates), and red-green blindness. The box contains a frosted globe and is attached directly to the ordinary light socket. In the slots are four colored glasses—red, green, yellow and blue. Anterior to these in the box is a small mirror which tilts so as to throw various combinations of red and green, yellow or blue, or any mixture of these four thru the glazed small, circular ring in the center of the paper placed in the holder in front of the box. The mirror is tilted by means of the small lever above the box.

The colored glasses are placed in the slots so that the tilting of the mirror in one extreme position will

cause the green light only to be reflected forward and the patient looking thru the fixation ring in the front of the box sees a green illuminated ring in the paper; tilting the mirror in the opposite direction causes this green ring to change slowly to red. The patient is asked to state when the ring first shown to him—whether it be red or green—looks different. The lever is then moved and the ring changes slowly from green or red to the opposite color. The examiner notes the moment when to him the ring is not pure green but begins to contain a shade of rose; or if red originally, to contain a shade of green. If the patient calls this shade late, or not at all, (if he is totally red or green color blind, he will not state that there has been any change to him from the beginning to the end of the movement of the lever) one can mark him down as totally or relatively color blind.

For anomalies of red and green differentiation, the red glass and gray is put in the upper slots, the blue and the yellow in the lower. The lever is set so that the glazed ring is without any color for the normal eye. This needs a little finer adjustment of the lever and colored glasses, as well as sometimes a slight movement up or down at the posterior end of the apparatus of the source of illumination. The apparatus can also be turned so as to face the daylight or faced away from it until the glazed ring is without color. If the patient sees this ring colorless, he is normal; red or reddish, he is a deuteranope; green or greenish, a protanope. A more technical and detailed account of the use of this apparatus is given in the "Archiv für Augenheilkunde," Vol. XXXVI, Nos. 3 and 4, Page 241.

This apparatus has served with the greatest of ease and satisfaction in the rapid and absolutely sure diagnosis of color blindness or of red and green

color weakness tests. It has two distinct advantages:

1. The patient does not have to call the colors nor is time lost with the matching of worsteds. He is told to state when the color rings look different to him and if he does not do so is red or green color blind. This can be estimated in three or four seconds.

2. In the examination of school children, or in the tests made for railroad employees or for the Army or Navy, etc., it would be of the greatest advantage. The tests can be made rapidly—20 to 30 seconds per person would establish any defects of color blindness.

### HEMERALOPIA LANTERN OF HESS.

HANS BARKAN, M. D.

SAN FRANCISCO, CALIF.

The object of this simple and ingenious little apparatus is to establish:

1. The presence of night blindness.

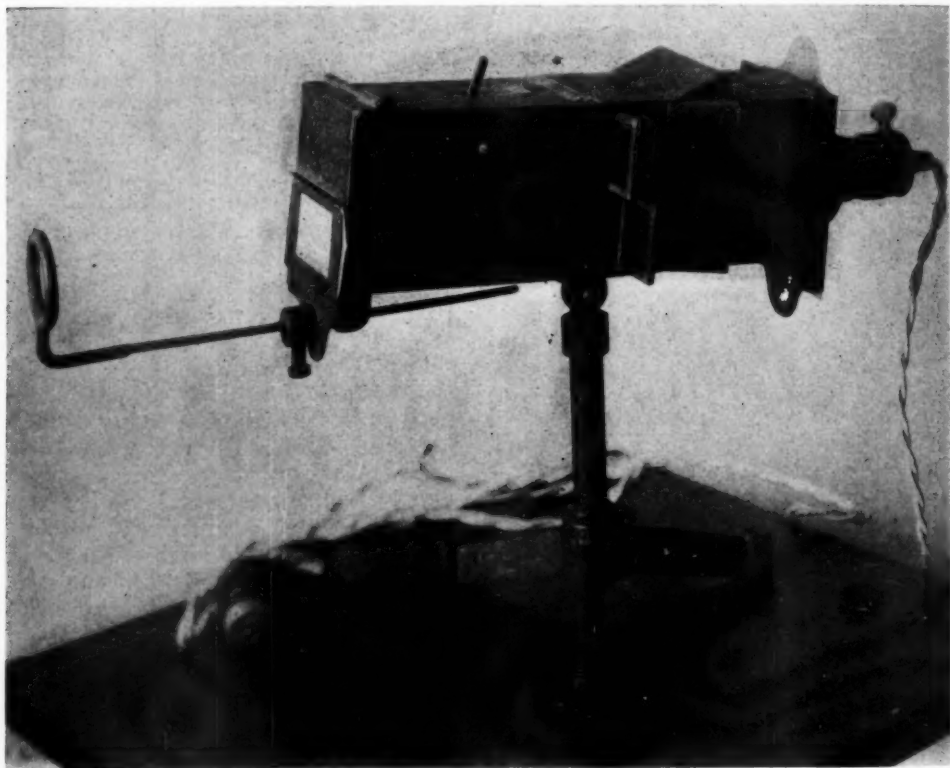


Fig. 1.—Color lantern of Hess.



2. To give an approximate degree of it, so that its progress in terms of a readily ascertained quantity can be clinically followed.

The interior of the metal box contains the illumination, in the form of an ordinary bulb attached without rheostat to any wall plug. This light illuminates seven small holes of equal diameter. Behind these holes are two glass slides which can be adjusted so as to overlap each other in various degrees. The one slide consists of an equally opaque white glass. The one shown in the illustration consists of a light gray glass at one end, becoming

darker progressively toward the further end.

The patient is adapted in a dark room for twenty to thirty minutes and the lantern then lit. To the normal eye, with both slides completely overlapping, seven illuminated holes are seen; the first one opposite the least gray part of the slide seems the brightest, with the light of the seventh hole just to be discerned.

The hemeralopic patient, according to the amount of his deficiency, will not see all seven: he may see as few as one or as many as six.

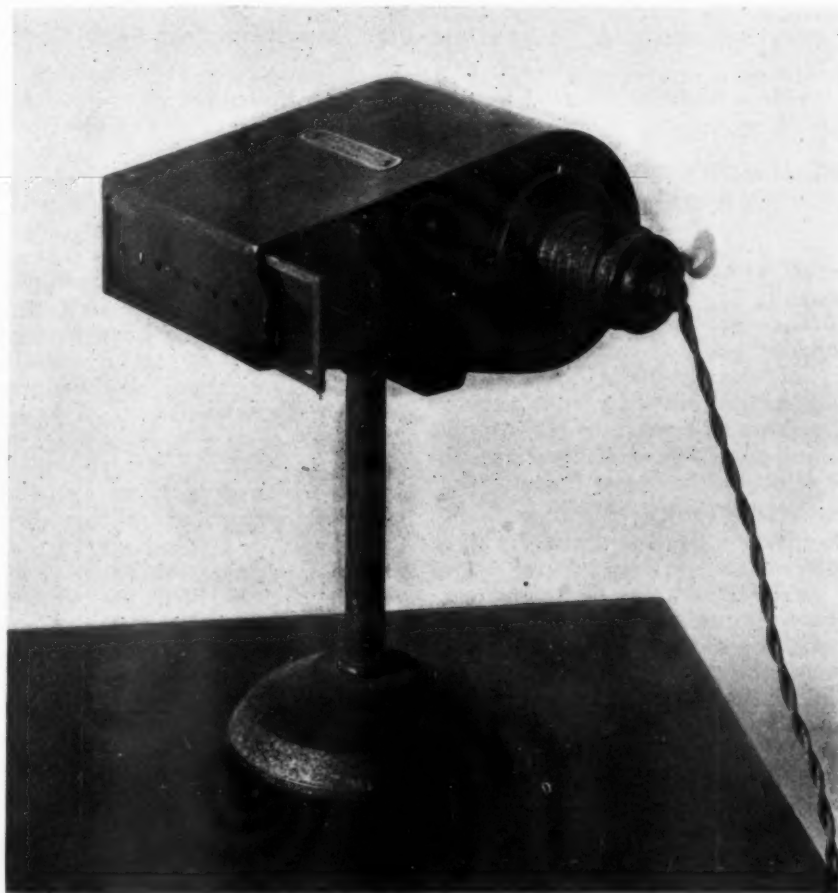


Fig. 2.—Lantern of Hess for testing hemeralopia.

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JEAN MATTESON, Room 1209, 7 West Madison Street, Chicago, Ill.

## OVERLOOKED CORNEAL IRRITANTS.

The part that local injury may play in causing corneal inflammatory reactions is easily overlooked. The important influence of trauma, in producing even the outbreak of parenchymatous keratitis of clearly luetic origin, has been recognized only of recent years; altho the share of trauma in setting up tuberculous processes on the surface of the body, or in the bony framework, has long been known.

Acute injuries to the cornea, by flying particles that cause loss of substance, or by steam, or other cauterants that produce superficial coagulation, are promptly recognized and quickly repaired. But the effects of chronic irritants are not so obvious, not so well known; and are more easily overlooked. All the symptoms of acute trauma point directly at the cause. Persistent, continuous, recurring slight injuries, give no such hints of their character and etiology. Their causes must be sought for; and often only the therapeutic test will determine the connection between cause and symptoms, and establish the diagnosis.

Probably every ophthalmologist of much experience has ascribed the

effects of incurved lashes rubbing the cornea, to eyestrain, exposure to wind or smoke, acute infection, or to some conjunctival irritant. He should regard himself as fortunate when a friendly patient comes back to tell him how he discovered a misplaced eyelash rubbing his eyeball; and how pulling it out, at once removed all the symptoms that eye drops, and glasses had failed to relieve.

The patient does not always appreciate how hard such an eyelash may be to discover; but neither does the doctor. When the eye is widely opened and the lid margin a little everted, as it is likely to be when the lids are separated by the fingers to search for such a cause, the offending hairs may stand up straight and look as innocent as any. But when the lids are closed with a little force, as in slightly exaggerated winking, or when the direction of the cilium is changed by adherent mucus, or even tears, its point may be brought in harmful contact with the corneal epithelium. The injury it does may cause no ulcer, that will show by staining; yet the irritation of epithelium and nerve endings may be sufficient to be a cause of long continued discomfort and complaint.

The relief given by pulling out of the misplaced lash completes the diag-

nosis; and in some cases there is no recurrence of the displacement when it grows in again. But, if in a few weeks later the irritation recurs, no time is likely to be lost by the patient before having it pulled out again, or seeking more radical removal by electrolysis, or operation for trichiasis.

The harmful influence of diseased palpebral conjunctiva on the cornea, which culminates in the corneal ulcerations and pannus of trachomatous eyes, is generally recognized; as is also the importance of treating the corneal condition by improving that of the lids. But cases occur, quite apart from trachoma, in which a chronic inflammatory condition of the part of the conjunctiva lining the lids is the source of persistent annoying photophobia, lacrimation and recurring redness of the eyeball.

The most commonly recognized connection between lid pathology and corneal irritation is that which leads to phlyctenular disease of the limbus. Here painting the everted lids with glycerole of tannin is often the most important local treatment, to cure the corneal irritation and the photophobia that arises from it. Corneal symptoms also arise from the palpebral lesions of vernal conjunctivitis, unsuspected until such symptoms call attention to it.

But there are rare cases in which symptoms of corneal irritation persist over long periods, causing the patient great annoyance and much loss of faith in oculists, in which a scarcely perceptible congestion and moderate epithelial thickening of the palpebral conjunctiva, seems to be the condition that provokes that complaint. Some of these cases get well quickly when the conjunctival surface of the lids is treated by mild mineral astringents, like alum crystal, weak zinc solutions, and other collyria. Others require applications of silver nitrate one-half per cent to the everted lid, repeated at intervals of two or three days. These latter may never get entirely well, but they get so much relief after each application that they keep coming back regularly, for such treatment, for years. These patients also develop as much

faith in zinc collyria as those suffering the more acute manifestations of the Morax-Axenfeld bacillus infection.

In slight corneal affections the objective evidences of disease are relatively insignificant, as compared with the subjective discomfort caused; and on that account more attention and thought must be given to these patients, than the apparent departure from normal conditions would seem to deserve.

E. J.

### THE LONDON TRIP.

Many of the American Ophthalmologists who are planning to attend the London Convention of English Speaking Ophthalmological Societies, to be accompanied by members of their families, have already arranged for their transatlantic trip, starting from either Montreal, New York, or Boston, by the old and famous Cunard line, or one of the others making similar sailings. However, physicians and surgeons, even if specialists, generally feel uncertainty about being able to leave important and critical cases; and get the habit of deferring, as long as possible, to positively commit themselves to such an enterprise.

Those who have not yet done so still have time to make the necessary arrangements, altho they will find the best space already taken. They can get in touch with a steamship company thru an address to be found in our advertising pages; or thru local agents which are to be found in all cities that have important railroad offices. Some ten days or two weeks are generally required to secure a passport, and as much more to get it vised, by consuls of the different European countries it is proposed to visit. So that at least a month should be allowed for this, before the date it is intended to sail.

There have been inquiries about parties making the trip together. So far as we know there has been no general arrangement of this kind made. But each of the larger passenger boats sailing east, the last half of June and the first days of July, will doubtless

carry some members to the Convention. For tours to be made to other places in the British Isles, or on the Continent, there are unrivaled facilities to join such parties in London.

We wish here also to call attention to the invitation extended to all members of the Convention to also attend the sessions of the Section on Ophthalmology of the British Medical Association; which meets at Bath, England, the week following the London Meeting. The German Ophthalmological Society (Heidelberg Congress) has fixed its dates for meeting August 3 to 5, to make it as convenient as possible for American visitors to be present at one of its famous gatherings. Thus the opportunity is offered of attending three important ophthalmologic meetings in three successive weeks; where the intervening days can all be spent in most attractive sight seeing.

E. J.

#### BOOK NOTICES.

**Ocular Defects Arising from Skull Injuries.** Joseph S. Somberg, M.D., Medical Examiner in Ophthalmology. New York State Department of Labor. Medical Division Bulletin No. 10. Paper, 8 vo., 50 pages. 1924.

This pamphlet is based on the examinations of practically all the eye injuries due to industrial accidents in the State in one year and a half, and a review of the records of previous years. Its author finds that such conditions are overlooked by the general practitioner, who first treats the case, and by the general surgeon, under whose care this type of patient comes later. This brochure is well calculated to bring to the attention of these workers, the ocular lesions and symptoms that pass before them often unrecognized.

Altho not divided into chapters, headings are introduced in the text that call attention to the different topics dealt with; and a table of contents indicates where each of these topics is discussed. These headings are: Introduction, Contre-coup Injuries, Lids and Conjunctiva, Cornea,

Iris, Pupils, Lens, Retina and Choroid, Optic Nerve, Glaucoma, Orbit, Ocular Movements, Optic Pathways, Accommodation, Functional Ocular Defects, and Comment.

The work contains no statistics, or case histories illustrating such ocular defects, but rather generalized statements regarding them, supported by occasional citations of authorities, whose observations have been published in the literature of ophthalmology. These citations are drawn from a wide range of current journals and recent publications, including several from this Journal and generally they represent the up-to-date thinking of specialists on these subjects.

We would say that the most satisfactory parts of this monograph are those that treat of the orbit, 5 pages, and the ocular movements, 10 pages. Some things that here might have been discussed at greater length have been taken up in other bulletins of this series, the whole series including more than two hundred pages. The general trend of thought here expressed is indicated by the following conclusions:

"Any structure of the eye or its musculature or the optic pathways may be involved in skull injuries.

Fractures of the skull are not necessary for such involvement.

The severity of the concussion is not always the determining factor in the amount of intracerebral or ocular damage.

Functional conditions are very apt to result from a very slight skull injury, without any concussion of the brain.

Ocular conditions resulting from skull injuries are often overlooked, due to various factors.

Functional ocular involvement usually subsides within a definite period, but if it persists, malingering should be suspected.

Ophthalmologic examination is indicated in all skull injuries, no matter how apparently trivial they may be."

Requests for these Bulletins should be made to Secretary, Department of Labor, 124 East 28th Street, New York City.

E. J.



**Ophthalmological Society of Egypt.**  
Bulletin of 1924. Paper, octavo,  
108 pages, 38 illustrations. Cairo,  
Egypt, 1924.

This small volume seems to be published by the Society, and all communications regarding it are to be addressed to the Hon. Secretary, Ophthalmological Society of Egypt, care Department of Public Health, Cairo. It contains 15 papers read at the annual meeting held in the Government Medical School, Cairo, March 7, 1924; with lists of Members, rules of the Society, report of the meeting, announcements, etc. One paper in this bulletin is printed in Arabic. The others with the discussions are all in English.

The first paper is one by Prof. Fuchs of Vienna, one of the Honorary Members who was present at this meeting, upon Glaucoma. This was followed by a paper on Glaucoma and High Myopia by Meyerhoff and one by Nasr Farid on Trephining and Iridectomy, all of which were discussed. Other subjects of papers are: cataract, Maher's operation for ectropion, an operation for the relief of trichiasis, a case of leproma of the cornea, spring catarrh, trachoma in Finland, primary tumors of the optic nerve, cases of papilledema, diplopia that might follow a squint operation, functional amaurosis, solar retinitis, and albuminuric retinitis.

In the table of abbreviations used in this bulletin we note those designating MacCallan's stages of trachoma. The offer of free microscopic examination of tumors sent to the Giza Ophthalmic Laboratory is continued, and instructions for sending pathologic specimens for the Memorial Ophthalmic Laboratory. The new permanent ophthalmic hospital at Giza has been completed, and this laboratory will have as one of the main features of its duty an "Ophthalmic Institute of Teaching," for the Country.

E. J.

**Medical Education, a Comparative Study.** By Abraham Flexner, New York, Cloth, 340 pages. New York. The Macmillan Co. 1925.

"O wad some power the giftie gie us,  
To see oursel's as ithers see us.

It would frae mone a blunder free us,  
And foolish notion."

That is the gift that Abraham Flexner has brought to the medical profession. He has not the peculiar view point, ambitions, or desires, of the practitioner of medicine. But he knows a great many things about medical education in many countries, that most medical practitioners and teachers do not know. From his different view point, he applies his knowledge to our problems, and his book furnishes extremely helpful reading. Practitioner and teacher, clinical chief and laboratory man, can read it with the certainty that Flexner's point of view, mainly that of an educator, will reveal to them suggestive glimpses of the wider relations of their daily work.

The character of this book is thus indicated in its preface. "The present volume attempts to make a comparative study of medical education in certain European countries and America, against background afforded by the general educational and social systems of the respective countries. It endeavors to depict and to discuss general tendencies and principles." "On the clinical side, internal medicine is my central theme. Other branches are, of course, important and necessarily differ in educational treatment—surgery and obstetrics, for example. I have, however, not discussed them in equal detail because I am persuaded that, if a sound organization is perfected, if support can be obtained and the medical clinic is properly carried on, the requisite adjustments in other clinics will more or less readily come about. I have also omitted postgraduate education, not because it is unimportant, but because it represents a different problem."

The material here brought together for the reader's consideration is well indicated in the twelve chapter headings given in the table of contents: "Medicine and Medical Education; Three Types of Medical School; General Education; The Basic Sciences, Modern Languages; The Curriculum: (A) Europe, (B) America; The Laboratory Sciences: (A) Conception and Equipment, (B) Teaching; The

Clinics: (A) Conception and Equipment, (B) Teaching; Institutes for Medical Research; Costs."

In every chapter the experience and practice of the civilized world are drawn upon, to furnish suggestions of how things may be done, and the results to be looked for from modified methods of teaching, under conditions present and with the resources available in America.

Every teacher of medicine should read this book. The faculty of any medical school that would fully discuss it would, by so doing, unify their ideas and harmonize their endeavors, in a way that must certainly add to the smoothness and efficiency of their organization, and the value of the medical education they could offer. For medical practitioners in general too, it is good reading. It belongs in a class lying between the technical works on medicine, and the literature of general culture that ought to have interest for every member of a liberal profession.

It scarcely mentions ophthalmology, says nothing of training for ophthalmic practice, and opens its discussions from the side of the internist or laboratory, drawing a few illustrations from the fields of surgery or obstetrics. But it deals with the fundamental conditions and principles of medical education, that must be recognized and considered by teachers and students of ophthalmology, and in graduate as in undergraduate study. From it too one can learn, or renew his acquaintance with the history of medical teaching in America and Europe, in a most agreeable and illuminating way. It is a book to pick up whenever you have the chance; and if you are a reader, to place on your shelf of standards works, and not to be superseded for many years to come.

E. J.

**Chininum Scriptones Collectae, 1923,** Cloth, octavo, 134 pages, 24 heliotype plates. Published by the Bureau for Increasing the Use of Quinin. Amsterdam, 1924.

The Dutch Government has extensive plantations in Java devoted to the production of quinin. This volume is

intended to promote the sale of their product. It is advertising on the highest plane, stimulating the demand for a valuable service rendered. It reproduces in abstract, 27 papers relating to this drug, that appeared in the literature of the world in the year 1923. Its publication in English is a tribute to the important share that English speaking physicians take in the medical service of great populations throughout the world.

Presenting only the literature of one year, many important topics related to quinin are here unrepresented. There is no paper here referring to its ophthalmic uses, and only a mere mention of quinin amaurosis. On the other hand there are papers on the subjects of quinin as a local anesthetic (throat and general surgery), its influence on acuity of hearing, and its effect on the dental pulp.

The twenty-four heliotype plates give a good idea of the cinchona culture in Java, the natural scenery and social arrangements of that part of the world, and the ways that various governments put up quinin, to be distributed at cost among their people living in malarial regions. There are here the sort of scenes one looks for in the National Geographic Magazine.

E. J.

#### CORRESPONDENCE.

**Ophthalmic Hospital of the Order of St. John (Knights Templar) of England, in Jerusalem.**

*To the Editor:*

This beautiful ophthalmic hospital located near the Jaffa Gate, outside the walls of Jerusalem, is mentioned in the 1923 annual report as being the "finest near-east ophthalmic hospital" and the visitor there will be greatly impressed with the model plans of the clinic, hospital and operating rooms and their cleanliness and sanitary arrangements.

An enormous amount of excellent work is being done by the small staff of hospital workers, comprising the chief surgeon (called the warden), Dr. J. C. Strathearn of Scotland; the assistant surgeon (called the sub-war-

den), Dr. Eyre of England; another assistant surgeon, Dr. Thompson of Canada (who was absent in England to get his "F. R. C. S."); the steward, Mr. J. Cubeisy, who has served for over thirty years in the work of this splendid institution; two English nurses; five assistant nurses; one dispensary clerk or druggist; and two orderlies.

There are beds to accommodate fifty patients, which during the busy season

ing the hot dry summer months. Dr. Eyre informed me that it is in the nature of a diphtheritic conjunctivitis, and is very virulent and intractable. They have not been able to control it by any manner of treatment yet employed, and they have tried all known remedies, zinc, silver, antitoxin (instilled), optochin, silver colloids and other topical remedies, all with little or no avail. He said "indeed as good a remedy as we have found is common 'tap'



Ophthalmic Hospital in Jerusalem.

are all occupied, and approximately 50% of the needful operative cases are turned away for lack of bed space.

In the year 1923 there were 14,777 new patients, as many as 592 new patients have applied for consultation in one day. There were 60,947 consultations, 1,524 admitted to the hospital and 4,169 operations performed in 1923.

Classified according to religion; of these new patients 8,786 were Moslems, 3,082 were Christians, 2,909 were Jews. Of the new cases 1,286 were blind in one eye (9%) and 486 were blind in both eyes (3 1/3%); "by far the greater portion of this blindness was the result of acute conjunctivitis."

Acute conjunctivitis occurs in this country as a seasonal epidemic, dur-

ing the hot dry summer months. Dr. Eyre informed me that it is in the nature of a diphtheritic conjunctivitis, and is very virulent and intractable. They have not been able to control it by any manner of treatment yet employed, and they have tried all known remedies, zinc, silver, antitoxin (instilled), optochin, silver colloids and other topical remedies, all with little or no avail. He said "indeed as good a remedy as we have found is common 'tap'

water" (hydrant water) frequently used. He did not mention the bacterial findings, but clinically it is a membranous affair in which the cornea early turns gray and melts down (allied to keratomalacia), and there is a sharp systemic impression created by the disease. The warden's report mentions that 15% of the new cases presented this form of destructive epidemic conjunctivitis!

Trachoma, with all its manifestations, still remains "as one—if not the chief—of the scourges of Palestine."

This disease here, as in America as noted by Dr. Stucky in the mountains of Kentucky, and U. S. Health Officer, Dr. John McMullen, in the mountains of Tennessee (et al), starts as a rule in childhood; and while it rarely pro-

duces actual blindness to the extent that the afflicted patient cannot count fingers at 1 meter, yet it produces practical blindness from the start; and the unfortunate victim is robbed of the joy of living and of making his mark in the world. In 1923 the incidence of trachoma, Dr. Strathearn was happy to report, was "only 83% of the new cases," whereas during the previous four years it ran slightly over 90%! My own impression in the study of trachoma is, that it is a filth disease, or a disease due to lack of personal hygiene, and if my deduction is correct the cure of the disease as a scourge to mankind consists in prophylaxis. This would be a gigantic undertaking in this part of the world and indeed thruout the orient.

The principal part of the operative work performed in this ophthalmic hospital, endowed and maintained by the Knights Templar fraternity of the world and especially England, is for the relief of trachoma. In 1923 plastic operations for relief of this disease (trichiasis, etc.) numbered 2,580 (62%). Dr. Eyre informed me that they had found that tarsectomy—complete, or nearly complete—afforded the best results. There was noted an increase of cases in 1923 seeking relief from trachoma from the fact that more afflicted Jews and Arabs came, in order that they may, when cured, emigrate to North and South America. The international situation "is leading to an exodus from this small country—in one month (August 1923) some 1,500 Jews and over 500 Arabs" emigrated.

Since General (now Field-Marshal) Allenby drove the Turks out of Palestine and placed the country under the protection of England, there have been erected large pumps to conduct the water from the ancient pools of Solomon, some miles from Jerusalem, to a newly constructed reservoir near the city and now for the first time, Jerusalem has a city water supply thru conduits, hydrants, and taps, and soon fresh running water will be, or should be, in every home. This, to my mind, will prove the first step in the needed sanitary and hygienic education of this people. But Palestine

is an agricultural country and the family water supply comes largely from water jugs or goat skin bags, filled at a neighboring spring and carried on the head or on the back—a very picturesque mode, but water supplied for personal needs in this manner does not fulfill the modern idea of sanitation and hygiene. What this country needs is not religion or tradition, they have plenty of that, but modern education on health.

The ophthalmic hospital of St. John is conducted as a strictly charitable institution. There are no pay wards—all beds are free. There are tablets erected at the head of the beds stating where the endowment came from. I was pleased to note one such tablet stating that the endowment for that bed came from the "Knights of St. John in the U. S. A." The further one goes from home, the more he appreciates his friends and the home institutions.

DERRICK T. VAIL, SR.  
Cincinnati, Ohio.

#### Epithelial Parasites.

To the Editor:

Dr. Howard in his recent most interesting article on Epithelial Cells and Conjunctival Infections, makes the statement that the location of bacteria on the epithelial cells has been practically unnoticed, except by McKee, Lindner, and Pillat.

In view of the early date at which it was made, it seems worth while to call attention to an observation made by my father, Dr. Harold Gifford. In an article "Notes on Ophthalmic Bacteriology. Partly with Reference to Asepsis" (Archives of Ophthalmology, 1898), he describes the increased percentage of positive inoculations made with epithelial scrapings, over those made with material obtained by a loop. He says: "The results were quite surprising. Where I formerly, by taking three platinum loopfuls, obtained on an average not more than five or six colonies, I now rarely got less than twenty, and in cases where the patient was anesthetized, so that the scraping could be carried out thoroughly, the average has been about two



hundred. In a recent case, in which only the upper retrotarsal fold was scraped, between three and four hundred colonies were obtained. In these luxuriant cultures from the normal membrane, however, the vast majority of the colonies are, as a rule, of one or another kind of the xerosis bacillus; the number of white coccus colonies not being increased by this method, to anything like the same extent. On the last fifty cases in which this plan has been applied to the normal conjunctiva, only three negative results were obtained, (i. e., positive results, 94 percent); and in these three only a small portion of the membrane was touched. I believe that if all parts of the sac could be properly examined, it would never be found sterile. The xerosis bacilli, which, I believe, are always present, I have found in at least three varieties, and as they generally fail entirely to grow when the inoculation is made directly upon agar, and as they appear to adhere particularly closely to the epithelium, it is not surprising that their abundant occurrence has been to some extent overlooked."

In conclusion he states, "In estimating the number of germs in the con-

junctival sac, no method should be depended on in which the membrane is not scraped rather firmly, or serum not used as a cultivating medium."

Lindner's observations were reported in the American Journal of Ophthalmology following his visit to the United States in 1921. I discussed them, with emphasis on their importance, before the course of instruction of the American Academy of Ophthalmology and Oto-Laryngology in 1921.

Dr. Howard's paper calling attention to his confirmation of Lindner's work is most timely, and the importance of this work and Dr. Howard's addition to it can not be overestimated. This note is not intended in any way to belittle the importance of their work, but only to call attention to earlier observations along the same line by a pioneer American student of ocular bacteriology.

SANFORD R. GIFFORD.

Brandeis Bldg., Omaha, Neb.

(The importance of a discovery may be indicated by the number of observations previously recorded that it interprets and correlates. Ed.)

## ABSTRACT DEPARTMENT

Reprints and journal articles to be abstracted should be sent to Dr. Lawrence T. Post 520 Metropolitan Building, St. Louis, Mo. Only important papers will be used in this department, others of interest will be noticed in the Ophthalmic Year Book.

**Baldassarre. The Sculco Antitrachoma Treatment.** Arch. di. Ott., 1924, p. 341.

A good deal has appeared in the Italian literature for the last few years concerning this method of treatment proposed by Nicola Sculco, an Italian oculist who died in 1922. His method consists in the use of a powder composed of three herbs. (*Nepeta citriodora*, *salvia officinalis*, *thymus serpyllum*.) The greenish powder is put out in tubes containing enough for ten treatments.

After cocainization the powder is dusted on the everted upper lid, after which the lids are closed carefully and held shut by the patient for two hours after which all traces of powder are

washed out. Five daily treatments are given and then five treatments on alternate days. Preceding the third treatment and, in severe cases, the fourth treatment, a mild scarification of the follicles is performed. In favorable cases ten treatments usually suffice for a cure, altho in some a few additional treatments are necessary. Sculco observed the best effect in fairly advanced stages of trachoma, which he called the mature stage. The effect on cases with pannus and corneal ulcers was especially remarkable, the pannus clearing rapidly.

Baldassarre, in judging of the amount of powder to use, started with as much powder as is contained in a Daviel spoon; and increased it up to

the amount which produced after twenty-four hours a thin membrane on the conjunctiva. If a good reaction followed the normal dose, scarification was often omitted, but the dose increased. He believed it best to bandage both eyes during the two hours after the treatment. The cases treated were as follows: 3 early, 5 more advanced without pannus, 8 with pannus, of which 5 had infiltrations or corneal ulcers. In the early cases not much effect was noted on the follicles. In the more advanced cases the follicles disappeared and the thickened tarsus had resumed a normal thickness after the third treatment. Secretion ceased after three or four treatments. Very little scarring was produced. In the cases with pannus, the pannus cleared up very rapidly. Deeper opacities cleared somewhat. In those with severe ulcers the ordinary treatment for the ulcer was necessary in addition.

The previous literature has been chiefly clinical. Sculco believed that an enzyme, present in the nepeta citriodra, has a selective parasitocidal action on the cause of trachoma leaving the normal tissues undamaged. Addario La Ferla treated one eye in a series of cases, the other eye being treated by silver nitrate, and examined excised specimens after a certain period. He believes the greatly superior effect of the Sculco treatment was due to its stimulation to phagocytosis.

Baldassarre analyzes the chemical principles in the three dilutions used. The active presence of nepeta citriodra (ordinary catnip) is an enzyme and an essential oil, the latter composing .3% of the herb. *Salvia officinalis* contains an ethereal oil containing 1.3% to 2.5%. The active principle of *thymus serpyllum* is thymol, which makes up .3 to 4% of the fresh herb. The essential oils are volatile and hence penetrate the tissues deeply. In weak solutions they produce hyperemia and leucocytosis. The same is true of the glucosides and enzymes also present.

The author considers the most important constituent of the drug, how-

ever, is a toxin present in nepeta, which apparently has a selective action on certain cells causing necrosis with a minimum of scarring. In cases of spontaneous cure of trachoma, a similar necrosis of the follicles with absorption of the products occur. Along with this is a hyalin degeneration of the vessels which hastens the process. The fact that the Sculco treatment is ineffective in the early stages, the author explains by the fact that the follicles are at this stage deeply ensconced in the subepithelial tissues, which supplied them with new blood vessels. In the later stages the follicles are closer to the surface and more vascular, so that the toxin more easily produces necrosis in the cells of the follicles and in their vessel walls. The absorption of the products of necrosis is hastened by the hyperemia and leucocytosis caused by the other elements of the drug. The effects of the drug may be summed up as first, parasitocidal (questionable), 2nd, causing hyperemia and phagocytosis, 3rd causing necrosis of certain cells of the follicle. The author wishes to encourage other oculists to try the Sculco treatment and pays tribute to the achievements of Sculco.

S. R. G.

**Leplat, G. Ocular Reactions Caused by Unilateral Contusion.** *Ann. d'Ocul.*, 1924, v. 161, p. 87.

The author's findings are the result of a clinical and experimental study.

1. Variation of intraocular tension: In the rabbit, there is regularly an increase, sometimes sudden, often great, of the tension. Sometimes there is a secondary rise to greater height, which lasts 30-40 minutes. The uninjured eye may also show a rise of tension, which is neither so great nor so lasting as in the injured one. Later, it shows a slight hypotension.

In the dog, there was usually a distinct rise, followed by a prolonged period of hypotension. The normal eye has a slight hypertension occasionally, but usually hypotension. The latter depends somewhat on the anesthesia.

2. Modification of the albuminous content of the aqueous: This is in-

creased in both eyes but much more in the injured one. It does not appear at once, but requires about 8 minutes, reaching its maximum in 20-30 minutes. Fluorescein, injected under the skin of the back, appears in 8-9 minutes in the aqueous of the injured eye, and increases in amount for about 30 minutes. Little or none appears in the normal eye.

3. Variations in the pupil: There is usually a spasmodic miosis in the injured eye. But the pupil soon recovers its normal size, even if pilocarpin is instilled.

4. Vascular phenomena: There is an early conjunctival and ciliary in-

jection. The ciliary processes are intensely injected. The arterial tension is proportional to the ophthalmotonus.

5. Clinical: Wherever, following a contusion, the tension has been more or less decreased, it was always higher in a reclining than in a sitting position. This is also true of all forms of glaucoma, and is consequently a symptom of trouble in the regulatory apparatus of ocular tension. Following trauma, even after several hours, there has been hypertension, which was succeeded by a phase of hypotension with oscillations. The subjects would not permit tonometry of the uninjured eye.

C. L.

## NEWS ITEMS

### DEATHS.

Dr. Thomas H. Young, New Haven, Connecticut, aged fifty-five, died February 22nd.

Dr. William Breathwit, Pine Bluff, Arkansas, aged fifty-three, died in January.

Dr. Isaac A. Lederman, Louisville, Kentucky, aged fifty-one, died February 7th of abdominal carcinoma.

William Sawyer Dennett, of New York City, died March 6, 1925, aged seventy-six years.

Frank E. Auten, of Belleville, Ill., died December 21, 1924, aged sixty-one years.

### SOCIETIES.

At the annual meeting of the St. Louis Ophthalmic Society, held January 23, 1925, the following officers were elected: President, Dr. Jos. W. Charles; vice-president, Dr. John F. Shoemaker; secretary-treasurer, Dr. John F. Hardesty; editor, Dr. John Green, Jr.

The quarterly meeting of the Ophthalmic Section of the St. Louis Medical Society was held February 13, 1925. The scientific paper was presented by Dr. Leland Alford. The following section officers were elected for the ensuing year: Chairman, Dr. M. W. Jacobs; vice-chairman, Dr. F. C. Schwartz; secretary, Dr. J. F. Hardesty; treasurer, Dr. B. Y. Alvis.

At the March meeting of the Tulsa Academy of Ophthalmology and Oto-Laryngology the following officers were elected for the ensuing year: President, Dr. T. W. Stallings; vice-president, Dr. Charles H. Haralson; secretary-treasurer, Dr. W. A. Huber. Dr. Wm. T. Jones read an interesting paper on "Sympathetic Ophthalmia," which was freely discussed by the men present.

On February 18th, the Louisville Eye and Ear Society held their annual meeting at the Brown Hotel. The guests of honor were Dr. E. C. Ellett, Memphis, Tennessee, who addressed the society on "Pathologic Anatomy of Glaucoma" with lantern slide demonstration, and Dr. Edward Jackson, of Denver,

Colorado, who addressed the society on "Some Problems in Blindness." A number of visitors from out in the state attended the meeting.

The Section on Ophthalmology of the College of Physicians of Philadelphia met at 8 p. m., Thursday, March 19th, at the College of Physicians Building. The following program was given: Dr. Frederick Krauss, "Bilateral Exophthalmus due to Metastatic Osteosarcoma"; Dr. William F. Bonner (by invitation), "A Case of Neoplasm of the Pituitary Body." Lantern slides, Dr. Uribe-Troncoso (by invitation), "Gonioscopy and Its Clinical Applications. A New Gonioscope." Lantern slides.

Dr. Elliot C. Cutler and Dr. Wm. Evans Bruner were the speakers at the regular meeting of the Ophthalmological and Oto-Laryngological Section of the Academy of Medicine of Cleveland, which was held at Hotel Winton, February 27th. Dr. Cutler read a paper on "Choked Disc; Its Surgical Significance," with lantern slide demonstration. Dr. Bruner followed with a paper on "Choked Disc, Its Symptoms, Diagnosis and Course." A free discussion of both these instructive and interesting papers took place.

The annual meeting of the British Medical Association will be held in the historic city of Bath during the week beginning July 20th and the Section of Ophthalmology will meet on Wednesday and Thursday, July 22nd and 23rd. It is thought, as the convention of English speaking ophthalmologists takes place in London during the preceding week, that there might be some ophthalmologists from North and South America attending the convention, who would like to visit the association meeting at Bath. Any such ophthalmologists would be welcome guests at the meeting of the British Medical Association.

The New Orleans Ophthalmological and Oto-Laryngological Society met at the Domicile of the Orleans Parish Medical Society

on March 19, 1925. Forty-five members attended. At this meeting the Eye, Ear, Nose and Throat Hospital was decided upon as a meeting place for the society for the coming year. Meetings are held every third Thursday of the month, at 8 o'clock, adjourning at 10. All interested in these specialties in New Orleans are eligible for membership. Dr. T. J. Dimitry was elected president, and Dr. Val. H. Fuchs, secretary-treasurer for the coming year.

#### PERSONALS.

Dr. Ralph Fenton, of Portland, Oregon, was a San Francisco visitor in February.

Dr. J. F. Dickson, of Portland, Oregon, is visiting in Berkeley, California.

Dr. Hans Barkan was operated upon in January for duodenal ulcer and is making a good recovery.

Dr. E. K. Roy-Thomas has been appointed assistant ophthalmic surgeon to the Swansea General and Eye Hospital.

Dr. Louis Lehrfeld has been appointed neuro-ophthalmologist to the Philadelphia General Hospital.

Dr. and Mrs. E. H. Higbee, of St. Louis, have been spending the past six weeks in California.

Dr. Frank L. Henderson, of St. Louis, will leave the middle of April to spend the summer at his eastern home in Stonington, Connecticut.

Drs. J. F. Shoemaker, F. E. Woodruff, and William F. Hardy are among the St. Louis oculists who expect to attend the London meeting of the English speaking ophthalmologists in July.

The Buffalo Ophthalmological Club gave a dinner in honor of Dr. Lucien Howe in recognition of his fiftieth anniversary in medicine, on Thursday evening, April 16th, at the Hotel Lafayette. The address of the evening was given by Dr. George E. de Schweinitz, of Philadelphia.

#### MISCELLANEOUS.

The Perkins Institution for the Blind received a bequest of \$10,000 under the will of the late Wm. H. Maynard, Winchester, Massachusetts.

Under the will of the late Emily H. Bourne, the New York Eye and Ear Infirmary received \$10,000 and the New York Association for the Blind \$20,000.

By the will of the late Rudolph Keppler, the New York Eye and Ear Infirmary received \$10,000 and the New York Ophthalmic Hospital and New York Association for the Blind \$5,000 each.

Dr. W. H. Wilmer has arranged for Dr. Basil Graves of London to give a course in Slit Lamp Microscopy in Washington, D. C., after the termination of the courses now nearing completion at the University of Pennsylvania.

Washington University, St. Louis, will receive from the estate left by the late Sir W. Northrup McMillan more than \$1,000,000 for the establishment of an eye, ear, nose and throat hospital, which is to bear the name of the McMillan Hospital. This hospital, ac-

cording to the provisions in the will, may be operated as a department of the present Washington University Medical School.

The courses in Slit Lamp Microscopy in the Polyclinic Hospital of Philadelphia, under the auspices of the Graduate School of the University of Pennsylvania, which have just been given by Basil Graves, C. M., of London, have been most successful. The registrants, sixty-five in number, represented seventeen states, one of the students coming from Montreal, Canada. Those who have been fortunate enough to avail themselves of the opportunity afforded by Mr. Graves are enthusiastic in their judgment as to the value of the Slit Lamp, and profoundly appreciative of the untiring effort upon the part of this distinguished leader to clarify a new and most important branch of ophthalmology.

Through the kindness of the members of the Ophthalmological and Oto-Laryngological Section of the Cleveland Academy of Medicine who donated their professional services, 1,800 people were given preliminary ophthalmologic examinations, at fifteen hospital clinics. The occasion was "Save Your Sight Day," January 15, 1925, which was sponsored by the Cleveland Society for the Blind. Each patient was informed as to his ocular condition and advised as to treatment. The Cleveland Society for the Blind has inaugurated an efficient follow-up system, which promises to be productive of much good. Interesting statistics were brought out in the following figures: Refraction cases, 1,262; diseases of conjunctiva, 117; of cornea, 40; of iris, 10; of fundus, 28; of optic nerve, 18; of lens, 69; strabismus cases, 54.

A fund of \$3,000,000 has been raised for the establishment at Johns Hopkins University, Baltimore, of a center for ophthalmologic research. The new center will be called the Wilmer Institute, in honor of Dr. William Holland Wilmer, of Washington, whose friends and patients subscribed half the total of the fund. The remainder was given by the General Education Board of the United States. Dr. Wilmer will assume direction of the institute. Lord Grey of Falloden, England, a former patient of Dr. Wilmer, is one of the contributors. In addition to laboratories, the Wilmer Institute will comprise a hospital with sixty beds, of which forty will be for nonpaying patients. It is expected that the institute will be completed by September of this year.

The American Board of Oto-Laryngology will hold its first examination during the meeting of the American Medical Association in Atlantic City, May 25th to 28th. According to the rules of the board, applicants are divided into three classes: Class I.—Those who have practiced oto-laryngology ten years or more; Class II.—Those who have practiced oto-laryngology five years and less than ten years; Class III.—Those who have practiced oto-laryngology less than five years. The type of examination is different for each class. The secretary, Dr. H. W. Loeb, announces that thus far over 300 applications have been made.



## Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in **heavy-faced type**. The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is in an abstract of the original article. (Bibl.) mean bibliography and (Dis.) discussion published with a paper.

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- Friedenwald, J. S.** Ophthalmoscopy with yellow-green light. Visibility of retinal capillaries. (2 col. ill., 3 ill.) A. J. O., 1925, v. 8, pp. 177-179.
- Jackson, E.** Biomicroscopy. A. J. O., 1925, v. 8, p. 250.
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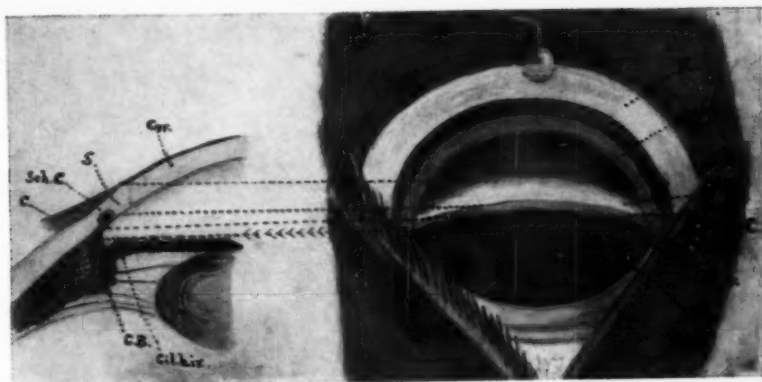
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## NORMAL ANGLE OF ANTERIOR CHAMBER.

### PLATE 10.

- Fig. 4.—The angle of the anterior chamber of a normal eye, as seen thru Koeppé's contact glass and the gonioscope. Semischematic picture showing the correspondence of the different structures with those of a microscopic section of the eye. I, iris; Cil. b. ir., ciliary border of the iris; CB, ciliary body; Sch. C., zone of the sclerocorneal trabeculum covering the Schlemm canal; S, sclera; Cor, cornea; K, contact glass.
- Fig. 5.—R.E. Normal angle as seen in the whole field of the gonioscope. Nasal part. C. b. i., ciliary border of the iris; C.B., ciliary body; Sch. zo., Schlemm zone; Sch., sclera; Cor., cornea.
- Fig. 6.—R.E. Normal angle, whole field, upper part. Same letters as for other figure. A brilliant white line is seen above Schlemm zone.
- Fig. 7.—R.E. Normal angle, temporal part. Iris processes on ciliary border of the iris. Schlemm zone of the same color as the sclera.
- Fig. 8.—L.E. Normal angle, temporal part. I. pr., Iris processes on border of the iris concealing the ciliary body, C.B., in lower part. Sch. zo., Schlemm canal partially filled with blood, which is collected along the inner and outer walls.
- Fig. 9.—Normal ciliary processes in a case of intraocular foreign body for removal of which an iridectomy was done. The left border of the coloboma is adherent to the wound and a thin membrane reaches down to the ciliary processes.
- Fig. 10.—Normal angle. Senile pigmentation of the Schlemm zone. Border of the iris very high, concealing the ciliary body.
- Fig. 11.—Same eye after the use of eserine. The ciliary body is visible all over the angle.
- Fig. 12.—R.E. Nasal angle, atrophy of iris. In the root a white-reddish, sharply limited band, where the pigment and reliefs have disappeared, stands out conspicuously. New formed vessels. Ciliary body of a light brown color. Schlemm zone slightly broader.

FIG. 4



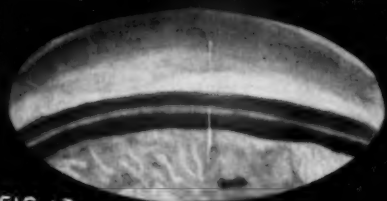


FIG. 13

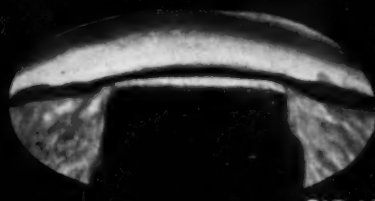


FIG. 14

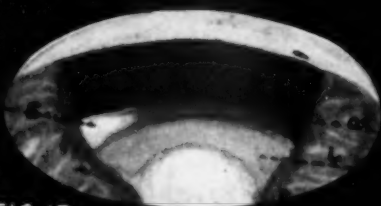


FIG. 15

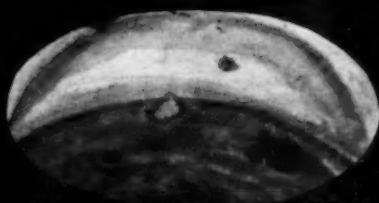


FIG. 16

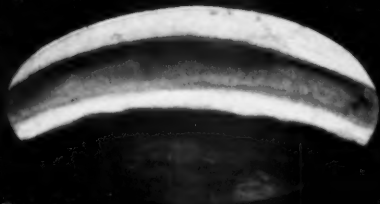


FIG. 18

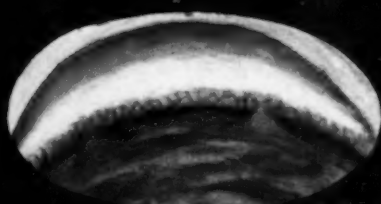


FIG. 17



FIG. 19

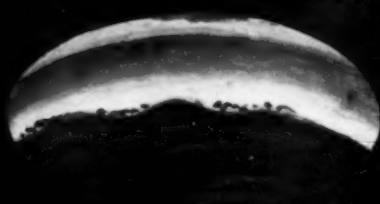


FIG. 22



FIG. 20



FIG. 23



FIG. 21

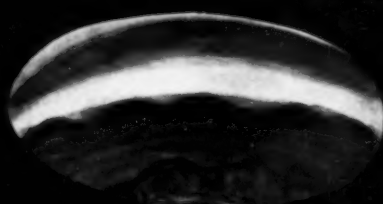


FIG. 24



## ANGLE OF ANTERIOR CHAMBER, PATHOLOGIC CHANGES.

### PLATE 11.

- Fig. 13.—R.E. Nasal angle. Atrophy of the iris in patches. The ciliary body is atrophic, of a dirty brown color, and is separated from the Schlemm zone by a narrow white line, the scleral spur. The Schlemm zone has a yellowish-brown color due to the deposit of yellow pigment.
- Fig. 14.—R.E. Upper angle. Iridectomy for cataract extraction. Iris slightly atrophic. Ciliary body broader; the angle being wider in aphakia. Stump of the iris in the coloboma white. Ciliary processes atrophic, with larger interspaces. Orbiculus ciliaris is visible as a dark brown band behind the processes, separated from the red fundus by a jagged clear cut line, the ora serrata.
- Fig. 15.—L.E. Upper angle. Iridectomy for occlusion and seclusion of the pupil. The iris, atrophic and changed in color, is adherent to the capsule in the lower part of the pupil. E, exudate covering the pupil; L, semitransparent lens; D, cyclitic exudate behind the lens; O S, ora serrata. Ciliary processes slightly enlarged, changed in color, and with three spots of degeneration in the base of the central processes.
- Fig. 16.—R. E. lower temporal angle. Recent luetic iridocyclitis. Deposits on Descemet's membrane. Aqueous turbid. Pupil in semidilatation. Hemorrhage near the root of the iris. The ciliary body is partly visible.
- Fig. 17.—L.E. of the same patient as Fig. 16. Iris apparently healthy shows to the gonioscope two well developed luetic papules near the root of the iris. A deposit of fibrin with a network of reddish filaments covers the Schlemm zone. The ciliary body is normal.
- Fig. 18.—L.E. Superior temporal angle. Iridectomy for acute glaucoma. Patches of atrophy scattered on the iris, which is entirely discolored. Annular peripheral synechiae. Border of iris slightly waved. No ciliary body is visible. Scleral zone very narrow.
- Fig. 19.—R.E. of the same patient. Nasal angle. Subacute glaucoma. After eserine a partial peripheral synechia is detected. The ciliary body is uncovered in the left part of the field, but in the right the iris border is attached to the sclera by a firm adhesion.
- Fig. 20.—R.E. Temporal angle. Chronic congestive glaucoma. Eserine treatment has detached the iris, leaving only a restricted peripheral synechia. The iris border is wavy and outside of it a yellowish stripe with a dot of pigment marks the impression of the iris root to the most advanced line of insertion. No ciliary body is visible. Scleral zone very narrow.
- Fig. 21.—L.E. of the same patient as of Fig. 31. Lower and outer angle. Prolonged miotic treatment. Root of the iris attached to the sclera with a characteristic "range of mountains" border. To the right the ciliary body is visible. To the left a yellowish red stripe sprinkled with fine black dots of pigment, represents the impression of the former adhesion of the iris to the sclera. The yellowish deposit does not cover the ciliary body but lies on the sclera below, and is continuous with the outer part of the stripe.
- Fig. 22.—R.E. Nasal angle. Simple glaucoma with congestive attacks. Trephining with complete iridectomy. The iris and coloboma are bound to the lens by numerous posterior synechia. Annular peripheral synechia. Border of the iris as a range of mountains. In the valleys numerous fine black grains of pigment stand out over a yellowish indistinct black ground. The white scleral zone is very narrow.
- Fig. 23.—L.E. of the same patient. Nasal angle. Trephining and complete iridectomy. The peripheral adhesion is broken above, where the ciliary body appears as a black zone with jagged margin. Below, the synechia is still present. The border of the iris is straight and bounded by a yellowish gray stripe dotted with fine pigment. This stripe has a clear cut, slightly wavy outline. Scleral zone very narrow, especially below.
- Fig. 24.—L.E. Temporal angle. Initial simple glaucoma. Beginning peripheral synechia. The border of the iris is sinuous and has entirely covered the ciliary body, but the Schlemm zone is still visible in the depression. That this pinkish band is not produced by a receding synechia is proved by its perfectly drawn edge and lack of pigment dots. Scleral zone normal.